

JPRS-UST-93-004  
14 September 1993



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# ***JPRS Report***

# **Science & Technology**

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***Central Eurasia:  
Science & Technology Policy***

# Science & Technology

## Central Eurasia: Science & Technology Policy

JPRS-UST-93-004

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14 September 1993

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### Efforts To Coordinate, Fund Regional S&T Programs Described

937A0125A Moscow POISK in Russian No 15 (205),  
9-15 Apr 93 p 1

[Interview with Valeriy Kurganov, scientific secretary of the Interdepartmental Council for Regional Scientific and Technical Policy and Cooperation With the Higher School, by POISK correspondent Yuliya Bogatikova under the rubric "Details for POISK"; place and date not given: "If Things Do Not Go Well, Give It Up"—first paragraph is POISK introduction]

[Text] Modern science, as is known, has an enormous number of troubles. If we do not touch upon the most global one—financial trouble—the severance of ties between its different structures, both central and regional, is affecting its development no less tragically. After the collapse of the Soviet administrative command system, which was oriented toward strict centralization, each of these structures began to stew in its own juice and—as a result—to reinvent its own "wheels." And several scientific formations were completely on the verge of disintegration. In order to correct the situation and to restore the might of "provincial" science, in February 1992 the presidium of the RAS [Russian Academy of Sciences] jointly with the Ministry of Science, the Higher School, and Technical Policy of the RAS made the decision to form the Interdepartmental Council for Regional Scientific and Technical Policy and Cooperation With the Higher School. Representatives of the presidium of the RAS, the management of the Ministry of Science, the Higher School, and Technical Policy, and all the regional and scientific centers of the RAS and the rectors of the most prominent higher educational institutions were included on it. While Academician Vladimir Shorin, chairman of the Committee for Science and Public Education of the Supreme Soviet of the Russian Federation, became the head of the council. At that time an executive body—the Renateks Center—was also established. Valeriy Kurganov, scientific secretary of the Interdepartmental Council, told our correspondent about its work.

**Kurganov:** One of our top-priority tasks was the establishment of a well-balanced system of regional formations which are called upon to coordinate scientific activity in various corners of the Russian Federation. At the suggestion of the scientific community, which was supported by local bodies of power, the Northwestern Regional Scientific Coordinating Council (the chairman is Academician Zh. Alferov), the Central Chernozem Regional Scientific Coordinating Council (the chairman is Academician A. Konopatov), the Middle Volga Regional Scientific Coordinating Council (the chairman is Corresponding Member of the RAS G. Anshakov), and the Lower Volga Regional Scientific Coordinating Council (the chairman is Academician Yu. Gulyayev), as well as the Scientific Coordinating Council of the Development of Science and the Higher School under the

administration of Stavropol Kray under the chairmanship of Corresponding Member of the Academy of Medical Sciences K. Orekhov were formed and were approved as structural subdivisions of the Interdepartmental Council.

A financial fund was established to support materially the implementation of regional scientific policy. It is formed both from the federal budget and from the local budget. The government endorsed the suggestion of the council members: to transfer to the Fund of Regional Programs 1 percent of the assets received by the Ministry of Science—about 3 billion rubles [R]. Of course, this is not much for present times. But if you consider that local organizations, which are establishing their own funds, will deduct 3 percent, an amount that is sufficient to implement scientific programs will result.

In many oblasts of Russia work has already been started on the organization of their own scientific and technical programs for the solution of vital problems of the region. For example, in Astrakhan, Bryansk, and Tula these are ecological problems and conversion; in Voronezh and Karelia this is the efficient use of natural resources. And the Interdepartmental Council is helping to analyze the situation in the krays and oblasts of Russia and is coordinating operations. And, moreover, it is enlisting for the implementation of such programs specialists, of whom there are not enough in the given region. Thus, programs now will not be sent down "from above," as before, but will be formed "from below," and then will undergo examination in the Interdepartmental Council. For it is also the highest expert body. And if the council approves them, they will be sent to the Supreme Soviet of Russia. Incidentally, the Interdepartmental Council in 1992 considered and approved two programs. One of them—the Siberia Program—was prepared by the Siberian Department of the RAS. By means of it the enormous region will be able to support and develop its own scientific base. The other one—the Picowave Technologies Program—is called upon to solve problems of the industrial application of technological processes with the use of sources of ionizing radiation, which will make it possible, in particular, to introduce an effective method of the sterilization and processing of food and agricultural products. Its client is the Ministry of Agriculture of Russia.

New scientific structures, the establishment of which our committee is actively promoting, will give scientists much help in the fulfillment of such programs. Thus, in Tula with the support of the oblast Soviet of People's Deputies and the administration of the oblast the Tula Scientific Coordinating Center was organized on the basis of Tula Polytechnical Institute and large sectorial scientific production organizations, the Tulachermert, Splav, and Tochnost Scientific Production Associations. Academician Arkadiy Shipunov, a member of the Interdepartmental Council, became its chairman. In 1992 the oblast Soviet and the administration of the oblast allocated for the formation of the center R600,000. This made it possible to begin the drafting of territorial

scientific and technical programs for Tula Oblast—on the problems of conversion, ecology, new materials, and powder metallurgy. On the initiative of Corresponding Member of the RAS Vladimir Grachev, who is a member of the Interdepartmental Council, a similar center was established in Penza. While the Bryansk Scientific Center, which operated on a voluntary basis, was transformed into a local branch of the council. Its task is to coordinate scientific and technical policy in the solution of the burning problems of the oblast: the overcoming of the consequences of the accident at the Chernobyl Nuclear Power Plant and the conversion of the machine building complex. Similar scientific structures are being established in Astrakhan, Vladimir, Voronezh, Ivanovo, Tver, Samara, and Ulyanovsk Oblasts.

Moreover, on the suggestion of the chairmen of Soviets of People's Deputies and the heads of administrations the Interdepartmental Council took upon itself to see to the coordination of the activity of already existing scientific organizations and associations of scientists—the funds in Krasnodar and Stavropol, the scientific centers and higher educational institutions in Astrakhan, Kaliningrad, and other cities.

In order to overcome the gap that exists between academic science and VUZ science, the council is forming regional scientific educational complexes. Such a complex is already operating in the Kuzbass and is being established in Tomsk and other cities.

#### **Osipov, Saltykov Dispute Over Basic Sciences Fund**

937A0130A Moscow *NAUKA I BIZNES* in Russian  
18 Jun 93 p 9

[Article by Vladimir Pokrovskiy, *NAUKA I BIZNES* columnist: "Academy Demands Saltykov's Blood"; boldface as published in source text]

[Text] Last week the languid conflict between the Ministry of Sciences and the leadership of the Russian Academy of Sciences acquired the nature of a deadly spasm whose results may have an extremely dramatic effect on the fate of scientists and domestic science as a whole.

It began when Boris Yeltsin signed an edict appointing Vladimir Fortov (a 46-year-old thermal physicist from the High Temperatures Institute of the Russian Academy of Sciences [IVTAN]) as the chairman of the Russian Basic Sciences Fund.

Andrey Gonchar, who had always appeared the most likely if not the sole candidate for the post, thus received something on the order of a dismissal. The academy's presidium reacted very sharply to this turn of events. As we discovered from reliable sources, during the previous 5-year plan, the president of the Russian Academy of Sciences met with Boris Yeltsin and complained to him about the Ministry of Science, which appeared to want to destroy the academy, and with its latest action,

appointing Fortov, it mortally hurt the academy. It should be understood that as compensation for this moral injury, the academy demanded science minister Boris Saltykov's blood from Boris Nikolayevich.

Yeltsin, according to our information, promised to "decide" the matter in a month and to appoint the individual whom the academy advised him to appoint in Saltykov's place. Thus, a scenario wherein the academy will in the very near future "concentrate unbounded power in its hands" cannot be ruled out.

One of the main causes for the dismissal, or to be more precise, the nonappointment of Gonchar as chairman of the Russian Basic Sciences Fund, is his refusal to resign the post of vice-president of the Russian Academy of Sciences. According to the Russian Academy of Sciences charter, combining the post of chairman of the Russian Basic Sciences Fund with any other leading chair, much less the second chair in the academy, is not permitted. So why be outraged, one might ask? Especially since Gonchar himself has announced more than once that in the event that he were faced with the problem of choosing between the fund and academy, he would remain in the academy because they had elected him vice-president and he could not therefore ignore the people's trust.

Andrey Aleksandrovich, as if seriously making a choice (declining what is almost a ministerial post, for that is exactly how the seat of chairman of the Russian Basic Sciences Fund is assessed in the secret Table of Ranks) was being somewhat coquettish. Otherwise, there would not have been such a violent rejection of the edict by his leading colleagues. In my opinion, Andrey Aleksandrovich did not seriously consider the possibility of his being pushed aside from direction of the fund on account of a little line in the charter. Judging by a number of his actions, he did not take standards-initiating documents very seriously in general. Just take the instance where, nearly a month after approval of the Russian Basic Sciences Fund's charter and after its publication, he suddenly informed our journalist that the charter does not contain any prohibition against combining leading posts, thereby acknowledging that he did not even read the approved version of the charter. Andrey Gonchar probably hoped that he would be allowed to be chairman and permitted to combine it with the vice-presidency. In a word, he was very offended when his hopes went to rack and ruin.

So what will ensue from this summit of two presidents?

It is entirely likely that nothing will come of it and that the situation will be little different in a month. However, the chair under the minister of science has already been unstable for a long time because it a chair that is very tempting to others. It is very esteemed and weighty, and another very important consideration is that it stands somewhat off to the side of the government's main activity with respect to conducting economic reform. It begs to be occupied by someone from the "moderate opposition," let us say from the "civilian union," if some



agreement must be reached with it. It should therefore be feared that Boris Nikolayevich will nevertheless keep the first half of his promise—he is being reminded of it repeatedly by various parties.

As far as the second half is concerned, it is unclear whether the academy will enter into a fight over the chair with its other claimants or whether it will enter into an alliance with them and put forward its own academic pro-communist, for whom there is no room anywhere in the academy, either literally or figuratively.

A fourth scenario is that the ministry post will be occupied by the academy without a struggle. From the standpoint of the fate of the scientific sphere, however, this scenario is little different from the preceding ones.

A fifth scenario, massed defense of Boris Saltykov culminating in victory, assumes the active involvement of the scientific community and is therefore unlikely. Despite significant financial infusions at the beginning of the year, there is still not enough money in the institutes, and there are grounds for assuming that they [the institutes] do not feel any special love for either the academy or ministry (this is simply a point of view; we are unaware of any statistics on this score).

Of course, events may develop as before the referendum. They say we are not in agreement with Boris Nikolayevich on everything, but we will nevertheless support him with all our strength because otherwise he may be replaced by people with whom we would disagree on everything. It is not certain, however, that anyone could rouse the scientific community to such a defense.

And now about the fund. There everything rests on the academy's striving to seize power over it. And it would be incorrect to assume that the reason why Gonchar was not appointed is that someone strongly disliked his activity in the fund. On the contrary, we have occasion to hear only high evaluations of him in the ministry (of course, with the assertion of the claims discussed below). And in fact, Gonchar's indisputable service lies in the fact that he started the fund in the first place. Note that this is the first earned scientific fund in our country's entire history. Konstantin Kikoin of the Kurchatov Institute, one of the fund's experts, feels that science, at least physics, literally lived under a falling rain of grants. The Physics Institute of the Academy of Sciences lived under it; the Petersburg Physics and Technology Institute lived under it; and science in Kazan, Nizhniy Novgorod, and many other provincial centers lived under it.

At the same time, the fund's activity roused numerous censures. Andrey Gonchar acted imprudently at the very least, giving out grants to practically all members of the Russian Academy of Sciences' presidium and to all of the fund's experts. Under Russia's conditions, and indeed under the conditions of the academy, there is likely some fairness in such steps. By having stated that they were a necessity, however, Gonchar in fact proclaimed them as the fund's policy in the future.

Most of the resentment was due to the fact that the fund began serving mainly academic science. According to our information, approximately 85 percent of the grants were allocated to academic laboratories. This is not surprising inasmuch as the team of experts assembled by Gonchar (as many note, they are very impressive and qualified) also consisted mainly of scientists of the academy. Of course, one cannot rule out the possibility that this allocation corresponds to the true state of affairs and that the academy, having concentrated about half of Russian basic science in its laboratories, has its best half. This remains to be proved, however. In the meantime, the "second half" considers itself soundly cheated out of its fair share, and many of the nonacademic institutes in the Ministry of Science have begun making numerous claims that Gonchar has made the fund the academy's property.

This is precisely the reason why Saltykov was so bold as to propose that the government juridically formalize Gonchar's dismissal, thereby placing himself under a practically inevitable attack.

#### **Yeltsin Decree on Science Centers Leaves Questions Unanswered**

937A01344 Moscow DELOVOY MIR in Russian  
9 Jul 93 p 9

[Article by Vladimir Pokrovskiy: "Some Succeeded in Surviving"; the first paragraph is an introduction]

[Text] After long delays a decree from Boris Yeltsin on the organization of state scientific centers (see DELOVOY MIR, 6 July 1993, p 9) finally was issued. Now 33 Russian scientific research institutes have received assurance from the state that they are necessary and without fail will survive.

How serious these assurances are is not now dependent so much on the Ministry of Science or even on the government as on the tight-fisted Ministry of Finance. But today the directors of many of the institutes becoming state centers are breathing more easily; due to their new status they have been able to survive this year. According to the preliminary data received at the Ministry of Science, which has provided 57 billion rubles for maintenance of the system of state scientific centers (which in actuality gives the state centers an increase in their budget by approximately 30-40%), this is sufficient for both survival and even some development. The directors even have begun to think about preserving and maintaining scientific schools and replacement of antiquated scientific equipment; in these organizations there has been a great reduction in the outflow of personnel and moreover people have begun to return to science.

Strictly speaking, the decree only legitimized the prevailing situation, already taking shape a half-year ago. All the organized state scientific centers already have been financed in accordance with their new status for a half-year. Their number includes such universally known

institutes as the State Optical Institute, Central Aerohydrodynamics Institute, Applied Chemistry Institute, Physical Energy Institute, Scientific Research Institute of Genetics and Selection of Industrial Organisms, All-Russian Electrotechnical Institute imeni V. I. Lenin and many others. The range is very broad.

The only ones which are not there are the academy institutes. Although not in a single official document relating to state scientific centers is there a single word forbidding them from aspiring to such a status and although among the list of 300 or more institutes wishing to become state centers almost half are institutes of the Russian Academy of Sciences, they nevertheless must learn patience: the Presidium of the Russian Academy of Sciences is categorically opposed to giving authority to any one.

But most likely sooner or later this probably must be done. "Documents on the organization of a system of state scientific centers were drawn up with an eye to the future in such a way that the path to it would be open for academy institutes," says Boris Rudnyy, a specialist in the governmental apparatus of the Russian Federation, "and we hope that in the future the Academy will reexamine its attitude toward this."

In actuality, the arguments of the Presidium, Russian Academy of Sciences, that the academy constitutes a unified financing system and that everyone within the academy should be equals, etc., in general are rather poorly based. Today there are but few scientific research institutes which can survive by receiving sustenance from only a single source. Equality also does not exist today (if for no other reason than due to the presence of state scientific programs which are extremely nonuniformly distributed within the academy). In addition, within organizations similar to the academy it is inevitable that there be favorites and pariahs. The latter, in the opinion of the Ministry of Science, include the institutes with a humanities orientation and additional assistance for which at times is simply necessary.

But this is a matter of the future. For the time being, however, the state scientific centers and those that work there have plenty of other concerns. The centers must be ensured very strong legislative support. It is necessary to devise a system for their control which makes sense. There is a need to clarify fully the interrelationships between the government and the centers; most likely these interrelationships will be regulated by contracts between the government and each of the centers. It is probable that the form of these contracts will not be the same in every case because the institutes making up the centers are very diversified structures. It seems most probable that in the immediate future a Council of Directors of State Scientific Centers will be set up and the system of centers will come to resemble something like the academy system with the difference, to be sure, that this system no longer will be thrust endlessly between a governmental status and the status of a public

organization—it will be entirely governmental, a completely legitimate system with all the attendant consequences.

### **Ukrainian Academy of Sciences President Paton Endorses Cooperation With West**

937A0134B Moscow POISK in Russian No 23 (213), 11-17 Jun 93 p 4

[Interview between Boris Paton, president, Ukrainian Academy of Sciences, and Raisa Chirva, POISK correspondent: "We Are Emerging From Destructive Self-Isolation"; the first two paragraphs are an introduction]

[Text] What is the Ukrainian Academy of Sciences like today? One of the Western journals boldly characterized the academy as an ideal structure, which, alas, is a characterization which until now it has not earned. If you agree with such an assertion, the natural question arises—why? In the recent epoch of commands and administrative orders the notorious wall crushed even the work of scientists beneath it. Not so infrequently their attainments wound up in the archives, not in production. Now that great freedom has been given to these same enterprises they are not at all thinking about modernization, but on how to survive during the difficult restructuring period. Will it be that the scientist once again will be the loser?

How will the scientific community survive this "dead season"? The academy, refuting the gloomy predictions of our Western colleagues, has not broken up but lives on as an intact organism. Academician Boris Paton is optimistic, asserting that the Academy of Sciences has the capacity for self-renewal, that it is possible and necessary to act in spite of the difficult economic conditions. This thesis also became the basis for a conversation between a POISK correspondent and the president of the Ukrainian Academy of Sciences.

**Chirva:** In our day science has been unable to avoid commercialization. In your opinion is this good or bad?

**Paton:** In actuality, commercialization is solidly entering into the activity of many subdivisions of the Academy of Sciences. Small and joint enterprises within the academy—these are indicators of the intellectual product turned out, ready for the output of technologies. Will the process stop? I think that is far better if we direct it (I see in this a task for the Ukrainian Academy of Sciences Presidium) into a channel which will be advantageous for us. I have in mind the organization not only of those structures which are beginning the production of certain materials or equipment, but in particular those which have the goal of carrying out joint fundamental research, applied and experimental design work. That is, that the small and joint enterprises function in that entire traditional chain in which we orient the activity of our institutes.

We already have a prototype of such an organization. The universally known American company Pratt and

Whitney, which is engaged in the development and production of aircraft and spacecraft engines, has signed an agreement with our electric welding institute on establishing a joint research center. The objective is for the scientists of the two countries to develop new materials for aerospace use: from the drawing up of projects to their implementation. As a result of the joint efforts new technologies should appear which throughout the world are called "high technologies."

It is interesting that in such an agreement it is stated: materials will be developed which are of interest not only to the aerospace branches of both countries but which also are necessary for development of the entire economy. That is why such joint undertakings are personally impressive to me. And especially because raw commercialization, transforming the scientist into a businessman, is precluded.

**Chirva:** It is easier for the institute which you head, Boris Yevgenyevich, since it has a well-earned world reputation. But what about the other research groups?

**Paton:** They also have the opportunity to test themselves by cooperating with the West. The Ukraine, and this also means its representatives, are reaching out more boldly "for the people." And the progress of civilization consists precisely of the integration of science and the economy.

Another form of contacts with the world—the organization of international scientific centers—has also been developed. And such a form is being practiced extremely actively in our country. There already are four such centers in the Ukrainian Academy of Sciences. We have international centers for mathematics, physics, and physiology. The fourth center, starting up very actively, is an entire institute of cellular biology and engineering. However, your newspaper has written about it.

All these centers are being established on the basis of our institutes. To be sure, their organization involves many difficulties about which in the civilized countries at times they have no suspicion. Let's say the problems which arise with living quarters, conditions for the work and rest of our foreign colleagues. Nevertheless, Western specialists are arriving and working in our country.

Strictly speaking, what goals are we pursuing? We want to attract to our country, to the Ukraine, international public activity, to create conditions for joint research work. And thereby make a breach in the "iron" economic curtain already arising in our day. Whereas the times of the "cold war" had ideological roots, now a curtain has been erected for economic reasons. Judge for yourselves: very large sums are needed to send a Ukrainian scientist to any international symposium. And we are forced either to turn him down for such a trip, or in sending him off, deprive foreign exchange support for an entire section of the institute. Even trips to nearby foreign countries today turn out to be exceedingly costly for the academy. But we nevertheless are seemingly emerging from the self-isolation destructive for science.

By organizing international centers we are able to exert an influence on the "brain drain" process. Indeed, it is no secret that our scientists are pushing to the limit a search for normal conditions, seeking to preserve for themselves a creative identity. The international centers are drawing Western partners to our country. And not only people, but money as well. In most cases our foreign colleagues are no longer coming to us for a day or two, but for a half-year, a year or more. Recently we elected 54 foreign members to our academy. We also are asking them to participate in joint development work, the research projects of our institutes. Omelyan Pritsak, a professor at Harvard University, has headed up the recently established Oriental Studies Institute of the Ukrainian Academy of Sciences and has taken up permanent residence in Kiev. Thus, there are international forms of cooperation. The desire and possibility for bringing ideas to life are important. There is the idea of establishing an international center in the Ukraine similar to the American Princeton. It will not have a narrow specialization, but on the contrary will be concerned with the entire scientific range: physics, mathematics, and modern economics...

The idea of international cooperation is today receiving recognition throughout the world. Some modern technologies and their further development cost fabulous sums. Even countries which economically are in good shape are unable to work on them alone. Recently I met with colleagues from Germany and the United States. In both cases the talk was about space technologies. After all, the scientists of such well-developed countries also are not opting to work on this problem independently, but are striving for international cooperation. That is why the idea of creating a space laboratory and conducting joint research is only natural.

**Chirva:** For the time being we have been speaking of cooperation, by this meaning with distant foreign countries. But what about with our immediate neighbors, and especially with Russia?

**Paton:** I never was an adherent of the self-isolation idea. The tendency to self-isolation, especially amongst scientists, is the worst kind of folly. I have said this again and again and I will continue to say it. On the contrary, we must, we are simply obliged, to bond together that which has collapsed. I refer to the scientific contacts amongst the representatives of republics of the former Union. The renewal of joint development work in all fields. The time for reckoning losses and gains after the split has passed, never to return.

We have concluded an agreement with the Russian Academy of Sciences on creative cooperation. To fill it with specific accomplishments means one thing: restore those links which earlier joined our institutes and groups of individual scientists together. I understand that among many there is an aversion to the very word combination "creative cooperation." But, believe me, this is not a propagandistic logo. As a result of breaking of the links the Ukrainian Academy of Sciences, like



similar structures in the CIS countries, lost access to the information system, to databanks. But most importantly, like the separation of Siamese twins, many creative groups were separated from one another and this break brought more harm than good. And the operation itself was extremely painful. And if someone asserts that nothing terrible occurred, don't believe them. Many joint development projects suffered (an analogue of that very same cooperation for which we all are now striving).

That is why the Ukrainian Academy of Sciences has stepped forward as the initiator of organization of an intergovernmental association of academies of sciences of all the republics of the former Union. And, indeed, it is not because the Ukraine could not live by itself. It is simply necessary that someone begin this process. I understand what responsibility our Academy of Sciences has heaped upon itself in this undertaking. I am gratified that there has already been a positive response. The Russian Academy of Sciences has expressed the desire to enter into an association, there is a preliminary arrangement with the Belarus Academy of Sciences and Kazakhstan is next. I think that already this year we will end preparatory work and we will create such a scientific association.

### **Russian Science Ministry Official Explains R&D Policy**

937A0144A Moscow DELOVOY MIR in Russian  
30 Jul 93 p 13

[Article by Candidate of Technical Sciences Viktor Solomatenko under the rubric "The Value-Added Tax, Patents, and Science" (Moscow): "On the Current Problems of Innovations in Russia"—first two paragraphs are DELOVOY MIR introduction]

[Text] The problem directions of scientific and technical policy in the country should be clear and convincing for citizens, in whose interests and with whose participation, as is known, it is pursued. Otherwise this is not a policy, but intentions. Nevertheless the Russian Federation Ministry of Science, the Higher School, and Technical Policy is showing little concern for the popularization of the decisions being made. This article to some degree fills this gap. The knowledge on which it is based was acquired without the financial support of the state. For this reason the author cannot present a detailed program, but is forced to confine himself to criticism of the positions of the specialists who are in the corresponding state posts. But he will try to do this constructively.

The main subject of the discussion is the interview of Boris Yurlov, chief of the Administration of the Economic and Legal Regulation of Scientific and Technical Progress (NTP) of the Russian Federation Ministry of Science, the Higher School, and Technical Policy, for ROSSIYSKIY EKONOMICHESKIY ZHURNAL (No 11, 1992, pp 3-14). It, perhaps, is the most significant of

the recent statements of Russian scientists and executives of central bodies of government on the problems of scientific and technical development.

### **A Double Tax on the Intellectual Commodity**

The opinion exists that a boycott of innovations (the gaining and realization of knowledge) by employers, if their interests are infringed upon, is possible. But such a danger, which is actually serious today, does not have lasting social support. If the creators, who are capable of increasing the intellectual wealth of society, announce a boycott, a replacement for it will not be found soon. Many people are capable of handing out assets. At present employer-managers have been given unjustifiably great powers. So it is necessary to bring them in line with the interests of social development, and not to dispose oneself to them, thereby aggravating the problem.

With the introduction of the USSR Law "On Inventions in the USSR" the conflicts between creative workers and administrators of enterprises and organizations became more frequent. This testified to the force of the law and made it possible to hope for the dynamic formation of a new status of inventors. The patent law of the Russian Federation is coming into effect quietly. Under it there will be fewer conflicts, but also fewer results.

The imperfection of the legal protection of intellect in combination with the shortcomings of an economic nature leaves no hope that the negative trends in scientific and technical development will be overcome in the near future.

The problems of the economic regulation of scientific and technical progress are tied into the intricate knot of the expenditure mechanism. Given the existing system of financing and the remuneration of labor it is economically advantageous for the performers of research and development to extend the schedule date—the amount of the wage increases. And it is advantageous to work poorly so that there would be something to develop, modernize, and so on. That is, to obtain money for the same thing. But precisely the economic portion of the interview of Boris Dmitriyevich was the most constructive. The Russian Federation Ministry of Science, the Higher School, and Technical Policy decided not to leave all scientific institutions on budgetary support. Some of them should remain in the status of brain centers of departments, others should become a part of production structures, become private, or cease their existence. The experience of earlier structural transformations shows: It will hardly turn out immediately as contemplated. But the policy has been proclaimed, and this is reassuring.

The centralized nature of applied scientific and design organizations does not fit with the anti-expenditure development of new equipment. The anti-expenditure nature consists in the fact that the value of research and development is determined by the realized utility of its results for society. Such utility is judged, in particular, by the increase of the profitability of the product, in the



production of which they are used. Profitability is defined as the difference between the use value of the product and the expenditures on its development and production. The use value depends on how specific demands of the consumer are met. Thus, consumer-producer-developer are connected into an anti-expenditure chain. Given interrelations, which are free of external strong-willed instructions, they are still called market interrelations.

The following organization of innovations on anti-expenditure principles is advisable: The bearers of knowledge (the laboratory, design bureau, scientific research institute, scientists, engineers) and the owners of the means of production (industrial enterprises) organize coproduction, agreeing on the sharing of expenses and revenues. Here they recognize the transfer of knowledge on a new product or on the techniques of its production as a contribution to production.

When choosing the form of joint activity, one should take into account the peculiarities of the tax system. Prior to the making of amendments in the laws on taxes of the Russian Federation on 22 December 1992 the amounts transferred under contract of both parties were taxed. The tax was withheld from the producing party on the basis of "The Statute on the Composition of the Expenditures on the Production and Sale of a Product (Jobs, Services), Which Are Included in the Production Cost, and the Procedure of the Formation of the Financial Results That Are Taken Into Account When Taxing the Profit." They establish that the expenditures on research and development relate to the profit that is left at the disposal of enterprises. For the party, which made knowledge available, the amounts obtained under contract were taxed like any other income.

The Russian Federation Law "On the Making of Amendments and Additions to Individual Laws of the Russian Federation on Taxes" of 2 December 1992 may eliminate double taxation for participants who invested intellect in coproduction. In Article 1, Point 1a, Paragraph 4 it is written: "the profit, which was derived as a result of the joint activity of several enterprises without the creation of a legal person...is distributed among the participants...prior to taxation on the basis of the contract concluded by them." But it is necessary that tax services would recognize the legality of intellectual contributions, having rejected the instructions that the expenditures on the conducting of research and development are included in the taxable profit.

Unification into firms, which have science at their disposal, corresponds to the natural course of innovations, in case of which knowledge is increased and is realized as a continuous innovation process by one of the competing managing subjects. Many aspects of the regulation of these processes are acquiring the status of internal economic aspects. State bodies of management in the sphere of research and development are freeing

themselves of the practically insoluble problem of foreseeing all circumstances and giving in advance the corresponding instructions on innovations (which include an element of the unknown—the increase of knowledge).

In case of the joint activity of developers and producers within one firm it is easier to protect production and commercial secrets.

#### **Bureaucratic Trip Ups on the Path of Progress**

It is easy for bureaucrats, who have considerable assets at their disposal, to leave without work the few collectives that decide to develop new equipment on anti-expenditure principles. For example, specialists of the Lesnyye dary Industrial Cooperative (Sergiyev Posad of Moscow Oblast) drew up the design documentation of a forest cultivator at their own expense, proposing to let the producer have it on the terms presented above. But the technical administration of the Committee for Forestry of the Russian Federation Ministry of Environmental Protection and Natural Resources intervened. Knowing about the development of the cooperative, it allotted a state institute from an extrabudgetary fund 327,000 rubles (in prices at the beginning of 1992) for the development of an identical cultivator. Thereby the administration, on the one hand, twice punished forestry enterprises which were investors of the fund. It managed their investments inefficiently, having kept from the activity the developers who ventured to earn money on the conditions of payment in accordance with the end results. On the other, it used unsatisfactorily the scientific and technical potential of the institute. It diverted it for work that was within the power of the technical services of plants or small venture forms.

But the essence of the problem does not lie in the position and the used methods of the representatives of the department. Even given the neutrality of bureaucrats industrialists have little reason for anti-expenditure activity on the modernization of products. Why should an enterprise oblige itself to share the profit with a developer? As it stands it transfers without fail a minimum of 1.5 percent of the production cost of the marketable product to specialized funds for the conducting of research and development. It is more urgent for it to be ahead of other in obtaining developments, which are paid for by funds, than to divert its attention to an independent search for innovations of science and technology.

Extrabudgetary funds for the financing of research and development in their present form counteract the unification of production and science and decrease the demand for intellect.

Structural transformations under the conditions of political instability and the inconsistency of the economic reforms require particular courage. Many scientific research institutes and design bureaus, hesitating to take such a step, are concerned most of all with remaining on state support. The edicts of the president, which are aimed at the preservation of the scientific and technical

potential of Russia, convey the results of their efforts. In them the emphasis is placed on administrative methods of supporting science. But this protects first of all administrators and only after that scientists. Bureaucrats have remained insuperably powerful.

### Risk and Common Sense

The problem of increasing the demand for scientific and technical products is multifaceted. The low demand for the results of research and development is explained by the unsatisfactory quality of proposals, the imperfection of property relations, the consequences of the uninspired promotion of the role and importance of the scientific and technical revolution, the inflationary losses of the use value of commodities in case of a lengthy production cycle, and the shortcomings of education. As a result a large portion of society doubts the possibilities of domestic scientists and engineers to influence the improvement of the economy of the country.

Let us be realists: It is possible to change social consciousness quickly only by the practical experience of effective success in life owing to knowledge and the ability to materialize it in specific deeds. However, in cultivating such practical experience, one should not abuse the nonreturnable credits for those who venture to enter the new innovation environment, in order not to indulge parasitic sentiments. Tax credits for innovations, which are similar to the ones that were granted to businessmen last year, are more than desirable. Thus far there are no such credits. On the contrary, innovation activity is under worse tax conditions as compared with production activity.

The industrial enterprise was able to increase the reliability of the produced output either by increasing the weight of crucial parts or by improving the power circuit. The additional expenses for the acquisition of materials are included in the product cost and do not increase the taxable profit. For each ruble of expenditures on the conducting of research and development on the improvement of the circuit the producer was obliged to transfer to the budget a profit tax of  $32/(1-0.32)=47$  kopecks (as of 1 June 1992, 50 percent of this amount). That is, the levels of taxation of the results of the labor of metallurgists and engineers differed by 47 percent! Where is our common sense? It is very desirable for society that a plant would avail itself of the results of the labor of engineers on the improvement of the circuit. For they conserve nonrenewable natural resources and protect the habitat from the harmful discharges of the metallurgical industry. But instead of stimulating the plant in the choice of such a version, the state, on the contrary, punished and continues to punish it with the ruble. Why does the scientific community put up with such nonequivalent taxation of the results of intellectual activity and physical production? Why will leading economics scholars not voice their opinion about the statements that innovations ostensibly have been granted tax credits, when in reality such credits are lacking? Why do

the deputies allow unreasonable taxation? Are the products of the mind not that tangible? But no, let material and intellectual objects be appraised by the same criterion—the realized utility for society. And let taxes be assessed in accordance with it.

The increase of knowledge and its realization in production should be regarded as a single innovation process. Accordingly the expenditures on the use of intellectual and material objects should be equalized in the calculation of the product cost.

I will venture to assert: The interests of bureaucrats lie behind unreasonable taxation. Judge for yourselves. Today only 50 percent of the assets, which are allotted by the enterprise for the conducting of research and development on its own initiative, are not included in the taxable profit. But if it channeled these assets into the extrabudgetary fund at the disposal of bureaucrats and the latter returned them for the performance of the same work, 100 percent of the assets would not come to be in the taxable profit.

It is expedient to revise the procedure of calculating the value-added tax. Precisely the procedure, and not the essence of the tax, which is clearly expressed in its name. Value is added both during the physical production of the commodity and at the stage of its development and comprehension, which even includes basic research. But far from all the results of research and design work have to be materialized in goods. A portion of them perform a completely different social function—they reveal directions of development, which are not urgent. Obviously, the expenditures on the increase of the knowledge about such directions do not fit into the classical understanding of the addition of value. The withholding from them of the value-added tax is at variance with both the essence and the name of the tax. Two means of eliminating such a contradiction exist. The first: to differentiate the expenditures, which are connected with the conducting of research and development, into those that created and did not create value, and to exclude the latter from the taxable base. Such differentiation on the basis of centralized comprehensive instructions is practically infeasible. The second means remains—to carry it out on the basis of the fact of the use of the results of intellectual activity in the production of goods and the rendering of services. The accounting of such use is completely developed. It consists in the transfer to the value of the finished product the amounts of depreciation of intangible assets, the amounts of the payment for intellectual services, the payments of author's fees, payments of a portion of the profits in accordance with contracts on joint activity, and so on. Starting precisely with this stage, the expenditures on the increase of knowledge should be regarded as ones that added to the value of the commodity. It is necessary, alas, to recognize for the expenditures, which are not reflected in the price of the finished product, a more modest purpose—to reveal directions of development, which are not urgent. Enterprises will hardly abuse

such recognition. For they are interested in the accelerated depreciation of the expenditures on the value of the commodity.

The proposed procedure of calculating the value-added tax was predetermined by the definition proper of added value "as the difference between the value of sold goods, jobs, and services and the value of the material outlays, which have been ascribed to the costs of production and circulation" (see the Russian Federation Law "On the Value-Added Tax"). The value of nonmaterial outlays (objects that are grouped with intangible assets) in this case is not subtracted, that is, it remains in the determinable added value. Accordingly, to avoid double taxation it cannot be included in any other taxable base. Including at earlier stages of the increase of knowledge. Unfortunately, the content of the law on the value-added tax and the instructions on the procedure of the calculation and payment of the value-added tax are at variance with this truth. As a result law-abiding taxpayers are paying the value-added tax on nonmaterial outlays twice. True, the following happens infrequently—practically all the expenditures of enterprises on the increase of knowledge are exempt from the value-added tax: on patent and licensing services, which are paid for from the assets of the Russian Basic Research Fund, the Russian Technological Development Fund, and the extrabudgetary funds of ministries, departments, and associations, which are formed for these purposes in accordance with legislation, and for research and development, which are performed by institutions of education on the basis of economic contracts. Only the expenditures of enterprises on the increase of knowledge, which are not approved "from above" in the form of the issuing of a patent or the centralized allocation of assets, are deprived of "credits."

The proposed taxation of the expenditures of enterprises on the increase of knowledge will not lead to a appreciable decrease of the tax receipts of the budget—at present such expenditures are practically absent. In turn it will serve as a stimulus for enterprises for the independent financing of research and development and will decrease the need for state spending on the development of science and technology. Such taxation is disadvantageous only to bureaucrats: It breaches the barrier created by them between industry and science.

#### **Russian R&D Organizations Need Transitional Support**

937A0146A Moscow NEZAVISIMAYA GAZETA  
in Russian 10 Aug 93 p 6

[Article by Corresponding Member of the Academy of Natural Sciences and USSR State Prize winner Mark Pevzner under the rubric "Opinion": "Weeping for Sectorial Science. The Colossus Found Itself With Feet of Clay"]

[Text] Much has been said and written about the problems of basic and VUZ science. The state of affairs in

sectorial science is scarcely discussed, although it is hardly possible to dispute its significant contribution to the solution of national economic problems. And in the amounts of financing and the number of personnel sectorial science substantially surpassed academic and VUZ science. In the late 1980s on the order of 25-50 billion rubles [R] were spent annually on the maintenance of sectorial science, while the budget of the USSR Academy of Sciences came to several billion rubles. According to the data on 1 January 1991, 65,575 scientists, including 337 academicians, 651 corresponding members, and 6,531 doctors of sciences, worked at the USSR Academy of Sciences. The number of specialists of sectorial scientific research institutes and design bureaus exceeded 1 million.

The workers of academic scientific research institutes and higher educational institutions and individual specialists, who were striving to implement their scientific ideas, complained of the monopoly status of sectorial scientific research institutes, which created obstacles to the introduction of the developments of others. This entire "invisible city of Kitezh" is beautifully described by V. Dudintsev in the novel *Ne khlebom yedinyim* (*Not by Bread Alone*).

In October 1987 the CPSU Central Committee and the USSR Council of Ministers, having adopted the decree "On the Changeover of Scientific Organizations to Full Cost Accounting and Self-Financing," made an attempt to improve radically the activity of scientific research, planning, design, and technological organizations and to increase their role and responsibility in the solution of the problems of the acceleration of scientific and technical progress and the increase of the efficiency of social production. The status of a commodity was given by this decree to the product of the scientific institution, while the contract, in conformity with which payment for this commodity should also have been made, became the basic document that regulated the relations of the performer (the scientific and technical organization) with the client. The financing of the scientific and technical and social development of scientific research institutes and design bureaus and their material stimulation should have been carried out from the profit that was derived in case of the sale of the scientific product.

But the changeover of sectorial science to cost accounting and self-financing did not have and could not have had a substantial influence on the acceleration of scientific and technical progress in the national economy, inasmuch as it (the national economy) was and remains unreceptive to science. The demand for science could have increased only as a result of the large-scale reorganization of the economy of the country, which is only just beginning. But for the time being, in the opinion of many experts, the disintegration of science even leads the disintegration of production. What is happening now in sectorial science?

Due to the lack of a statewide strategy the process of reorganizing institutes is of a spontaneous nature. The

pilot experimental works and several scientific subdivisions, which wish for some reasons or others to acquire economic independence, are separating from institutes, forming joint-stock companies and limited companies. Most often these are structures of insignificant size, which use in their practical work started scientific and engineering projects that are five to 10 years old. A portion of the institutes are issuing stock. And, finally, there are institutes, the collectives of which intend to retain the status of a state organization in the hope of receiving stable budget financing.

The economic status of sectorial scientific research institutes in many respects is determined by departmental affiliation. Wealthy departments have the opportunity through sectorial orders to support somehow their scientific and planning and design organizations. But the majority of scientific research institutes and design bureaus, which live mainly on economic contracts, are dragging out a miserable existence. For example, the average monthly wage of a worker of the State Scientific Research Institute of Mining and Chemical Raw Materials (a typical sectorial scientific research institute that is not a part of the military-industrial complex) came in four months of 1993 to R9,983. In order to improve their economic situation somehow, institutes are leasing their production areas to commercial structures.

The number of people working in sectorial science is decreasing substantially (by 30.4 percent in 1992, according to the data of the Russian Federation State Committee for Statistics, as compared with 1990). This trend in itself is not that negative, since it is well known that there was always much "ballast" at scientific institutions. Unfortunately, young people have practically completely left scientific research institutes and design bureaus, and the bulk of research and development is now being performed by specialists of retirement and preretirement age. The process of training scientific personnel through graduate studies has essentially come to a halt.

In examining the future organizational structures of Russian science, it is possible to assume that sectorial science will hardly remain in the form, in which it still exists now. There will most likely emerge and become firmly established in Russia scientific structures that are close to the ones that exist in the West: federal research institutions, which are financed from the state budget and engage in basic research; large research centers,

which perform theoretical and applied work in the priority directions of the State Investment Program (the centers will be financed from the extrabudgetary technological development fund and other extrabudgetary funds); research organizations, which are established and financed by large firms (the experience of the United States shows that the research laboratories of industrial firms consume 60-80 percent of all the allocations for scientific research in the country); plant laboratories at enterprises, the expenditures on the maintenance of which are included in the product cost; small-size firms, which provide consultations and expert conclusions on the orders of industrial firms and local bodies of power and render intermediary services.

In order for Russia to compete successfully on world markets, it is important to find ways of converting scientific knowledge into a commercial product. Practical experience shows that the scientific development of a sectorial scientific research institute (and not just a sectorial one) can be successfully used in other sectors of the national economy. However, often neither the institute that is the developer nor enterprises of other sectors know about this possibility. Therefore, the organization of the periodical publication (for example, under the aegis of the Ministry of Science and Technical Policy) of a special journal under the provisional title NAUCHNO-KOMMERCHESKIY VESTNIK ROSSII seems advisable.

The development of the principle of the publicity and competition of scientific developments should be an important component of the reorganization of domestic science. It is necessary to allocate a large portion of the funds for research and development on a competitive basis and to evaluate the proposals of scientists on participation in some programs or others by means of an independent examination.

The suggestions of the author, of course, do not exhaust all the questions of the preservation and development of the scientific and technical potential of the country. In order to ensure the stable economic growth of Russia, it is necessary to develop the organizational, legal, economic, and social bases of the activity of scientific organizations during the present transition period and for the future. The Ministry of Science and Technical Policy, so it seems, could head this work. The problem of getting domestic science out of the crisis should be placed by federal authorities among the priority problems.



### Scientist Discounts Soros Fund 'Threat'

937401264 Moscow *NAUKA I BIZNES* in Russian  
16 Apr 93 p 10

[Article by Doctor of Physical Mathematical Sciences G. Tseytin, member of the coordinating council of the St. Petersburg Union of Scientists: "To Whom Can the Soros Foundation Do Much Harm?"—first paragraph is *NAUKA I BIZNES* introduction]

[Text] Can a foundation for the support of science, such as the Soros foundation, do harm? The answer is as if obvious: No, provided it does not finance research that causes harm to society. But Mr. Zurab Yakobashvili, deputy minister of science of the Russian Federation, who granted an interview in *NAUKA I BIZNES*, No 7, holds a different opinion. For proof of such an extraordinary thesis he resorts to a quite ingenious design: He examines not scientists, but "the scientific and technical complex of the country," which is "a system with inter-linked elements," and sees the danger in the fact that this very system will be "out of balance." For what specifically does he fear?

First, for "a specific state policy," which includes "the selective support of the most priority fields"; here it is indicated that this policy "is based on the recommendations of a significant number of scientific councils, to which leading scientists of the country belong." We all know well what state policy in the area of science is. This is the policy, which in practically all fields of science firmly established monopolism, put them in the hands of either the military-industrial complex or party ideologists, and elevated to key posts and furnished with lofty titles people, who pursue goals that are very far from science or else are simply ignorant. This is a policy, in case of which individual competent specialists, who miraculously survived and whose results the "system" wanted to profit by, were surrounded by mediocrity, which did not enable them to rise.

The years of "perestroika" and "democracy" changed hardly anything in the structure of "the scientific and technical complex of the country," which was formed by such a policy. If you do not count individual fields, mainly in the humanities, which are being shown off as a model of modernization, "figures," who were installed by the old system, remain everywhere among the leaders, and the meager assets, which are still being allocated by the government for science, are entirely at their disposal.

The second apprehension of Mr. Yakobashvili concerns "the right of the disposal of and the ownership of already obtained results." He speaks out against the "dumping sell-off" of results by their authors. This question is indeed a serious one, but what position would he like to defend? Or do we not know how the authorities, who disposed of all material resources, also appropriated the scientific results of their subordinates, at times without leaving them even on the list of coauthors? One can understand why these people would like henceforth to

dispose of the achievements of others, but this has nothing to do with the interests of the country.

The fact that in the applications, which were collected by the Commission of the European Communities, there was not one application in chemistry, is cited as a staggering example of the inability of foreign foundations to "perceive" scientific priorities. It is hard to say whether this is connected with the state of chemical research in Russia or with other factors, but, of course, our celebrated state policy did not allow such failures. Our top-level comrades had only to hear that "outside the citadel" a new field of research had begun to be financed, and the question of our "balanced response" was immediately raised. They placed a "reliable comrade" in the new direction, which completely cut off the way for the scientists, who really had something to say in this area.

Mr. Yakobashvili criticizes the Commission of the European Communities for changing the formulation of the task: Instead of aid to science of the former USSR the support of cooperation with scientists from the new states appeared. Here he hits the nail on the head! Not scientists, but science as a "system" worries him.

What does he propose in the interests of this very system? He regards as necessary the "coordination" of foundations with "the policy being pursued in the country," that is, he wants to dispose of not only state assets (we have seen, to what extent they "disposed" of them), but also the assets of foreign foundations. He regards as an example of the lack of coordination the preparation of the edict of the president of the Russian Federation on the exemption of grants from taxes, which concerns specifically the Soros foundation. And this is at a time, when a nearly ideal system of the classification of sources of grants into "well-known" ones and ones "that are little known, but have a scientific orientation" together with the procedure of issuing certificates has already been agreed upon by departments. Bureaucrats will never show what they can do!

Let us call a spade a spade. There has not been any science as a "system" in Russia for a long time, there are only individual efficient islands. Genuine scientists and bureaucrats, who are far from science, can sit side by side in official scientific "councils" and "academies," but there are no officially acceptable means of distinguishing one from the other. At large institutes efficient and demoralized subdivisions are similarly intermingled. However, any centralized decisions will be equally applied both to scientists and to the dead weight, which will reduce their efficiency to naught. What is called the scientific and technical complex of the country is merely a formal hull, by referring to which the former elite in science (as in the economy) is trying to reserve power and the disposal of property.

With the appearance of new sources of financing, which are independent of the old system, the "system" is losing its monopoly, while good specialists, who earlier were

forced to work for the "bosses" actually at dumping prices, are now acquiring the opportunity to choose. The power of the "scientists," who were appointed from above, has been shaken. And precisely this is causing some people anxiety.

In my opinion, the value of the initiative of Soros consists not only in the fact that many scientists will receive resources for the continuation of work, but also in the destruction of the very system that for years had strangled our science. However, it is too early to flatter oneself. One of the criteria of the foundation is publications, but let us recall how hard it was for some people to have a work published (particularly at "closed" institutes) and how many humiliating procedures one had to go through so that they would "permit" one to send an article abroad! And the bureaucracy is on the alert. The edict of Yeltsin on the Soros foundation thus far has simply not appeared. And Mr. Yakobashvili admits: "A consultative voice (in the council of the foundation—G.Ts.) for us is not the limit of dreams." Indeed, the ability of our bureaucracy to turn any initiative into nothing does not raise doubts.

#### **Extrabudgetary Funding for Applied Sciences Founders**

937A0126B Moscow NAUKA I BIZNES in Russian  
No 17, 14 May 93 p 9

[Article by NAUKA I BIZNES correspondent Marina Lapina: "Extrabudgetary Funds Have Been Paralyzed. And, It Appears, for a Long Time"]

[Text] The reshuffling of ministries and departments—the disappearance of some, the appearance of others—has affected first of all applied science. In 1992 the state extrabudgetary funds of ministries, corporations, concerns, and enterprises, which began to operate in conformity with the decree of the Gaydar government "On the Financing of Scientific Research and Experimental Design Measures on the Assimilation of New Types of Products," became the main source of its support. The Russian Technological Development Fund, which financed the best applied operations, mainly of Russian importance, crowned the system of more than 150 extrabudgetary funds of science.

Today one has to speak about all this, unfortunately, in the past tense. It was possible to extend the validity of the decree on extrabudgetary funds only to the first quarter of 1993. As soon as it passed, the bank accounts of all funds were frozen, while scientific research work of an applied nature since 1 April has been almost completely paralyzed.

Meanwhile the documents, which gave grounds for the existence of nonbudgetary funds in 1993 until the appearance of the corresponding law, were submitted to the government back on 16 October of last year. A conference on this problem with the participation of executives of the majority of interested corporations, concerns, ministries...was held, at last, only more than

two months later. As a result a number of leading ministries were given an assignment: to modify the documents and with allowance for all the remarks to submit them to the government. On 10 February, having been modified and corrected, with all the necessary stamps, they were again turned over to the science department of the staff of the Council of Ministers. Since then the officials of the staff have been maintaining silence.

It would be possible to explain the reluctance to speed up the work on the documents, for example, by doubts about their legal soundness, but there seem to be no grounds for this: Otherwise what is the stamp of the Ministry of Justice, which submitted the materials to the government, worth? As well as the stamps of the State Tax Service, the Ministry of Science, the Higher School, and Technical Policy, the Ministry of Finance, and the Ministry of the Economy? Be that as it may, a fact is present—it is the middle of the second quarter, but all the extrabudgetary funds are frozen.

Meanwhile the Ministry of Finance had already prepared the draft of the Law on State Extrabudgetary Funds. In essence, it reduces to the enumeration of the already existing funds and the payers, whose assets form them. Even if one assumes that events will develop rapidly and the draft law will get through the bureaucratic chain in the shortest possible time, all the same one ought not expect its appearance before the fall. But what will happen to the funds over at least the next two quarters? For the cutoff of the financing of scientific research and design work for such a period actually means that it is possible to give up many of them for lost. There is no longer anywhere to get the assets for their continuation. If only from the profit of enterprises, but one ought not count on it: The profit, whoever has it, is not enough even for immediate needs. Here they are not concerned about science.

#### **Russian S&T Institutes Unable To Pay Wages**

937A0132A Moscow IZVESTIYA in Russian 29 Jun 93  
p 4

[Interview by Vladimir Semiryaga, IZVESTIYA journalist, with Leonid Gokhberg. First four paragraphs are IZVESTIYA introduction.]

[Text] Even if the impossible happens in Russia and two constitutions are ratified, science will remain as one in all of Russia. Parliaments and presidents come and go, policies will be strewn around, but Russian scientists, as before, will surprise the world with their intellectual power and selflessness.

The romance of market relations has had little effect on the Russian scientific world. Thank God for that. Scientists have another destiny. A higher one. However, the deepening economic, political, and social crisis in this country cannot but have a negative effect on Russian science.

How will science in Russia survive this distasteful transition to a market economy?

This was the subject of discussion with the department head of the Center of Research and Science Statistics of the Ministry of Science and the Russian Academy of Sciences, Leonid Gokhberg.

**Semiryaga:** What is the general and financial state of Russian science today?

**Gokhberg:** Unfortunately, the situation is complex. The social-economic situation has hit science harder than other branches of the economy. Today one sees a decline in all basic indicators of science funding. For example, the total expenditures for science in Russia in 1989-1991 in current prices rose from about 22.8 to 29.0 billion rubles. But this, you understand, is deceptive. In unchanged prices, that is, considering inflation, funding in this period was reduced by more than a factor of two, from 21.7 to 12.1 billion rubles. Putting basic funds into effect (1.17 billion rubles in 1991) did not cover the loss in basic resources due to deterioration and wear.

The number of persons involved in research and development dropped by 22% from 1989 to 1992. The pay rate in science at the beginning of 1993 was 62% of the average pay rate in the economy, or a factor of 2.5 lower than in a joint venture and a factor of 1.8 lower compared with private firms.

However, on the other hand, if we remain emotionless, then the normal process of the adjustment of science to the system of new market relations is occurring, where new rules of play are being established between government, science, and business.

**Semiryaga:** Who is financing science in Russia and how is it being financed?

**Gokhberg:** According to 1991 results, 95% of current expenditures for science come from the budget. Prior to 1991 there were centralized funds which were formed by ministries and departments from enterprise deductions. But the proportions of these funds were insignificant and at their best constituted 4-5%. Since 1992 the practice of forming extrabudgetary funds by deductions (1.5%) from the cost recovery of production has been in effect. Unfortunately, this is not accomplishing everything, as was first thought. Look, the funds which have actually been received (and this is, according to preliminary data, about five billion rubles) are a factor of 25 lower than the expected level. A significant part of these funds was directed not toward the financing of scientific research and experimental design work, as had been proposed, but to cover the costs of production in communication, learning to handle new equipment. And this is already the next stage in the innovation cycle. Commercial structures are barely participating in the financing of science.

**Semiryaga:** Who is checking to see that budgetary funds intended for scientific research are being properly dispersed?

**Gokhberg:** The Ministry of Science, and the ministries and departments at their level.

**Semiryaga:** What is the structure of budget financing of science?

**Gokhberg:** At present work coordinated by the Ministry of Science and defense work are being financed from the budget. The Ministry of Science is allocating funds in three main directions:

- work conducted by scientific organizations of ministries and departments united by a program to retain Russia's scientific potential. A total of 58% of the funds allocated by the Ministry of Science go to this program. This also finances the Russian Academy of Sciences, the Academy of Medical Sciences, Moscow State University, the Academy of Agricultural sciences, etc.;

- 3% goes to finance fundamental research. This money is distributed in the form of grants to finance work done by small groups of individual scientists;

- 38% goes to finance work on priority fields, state scientific and technical programs, interbranch and branch programs, programs to develop state scientific and technical centers, the development of universities, the development of an innovation infrastructure, etc.

**Semiryaga:** Judging from your answers, for better or worse there is a system to finance science in Russia. Another matter is how effective it is.

**Gokhberg:** I want to stress that the existing system to finance Russian science is oriented toward a crisis situation. In this sense it needs continuous improvement.

**Semiryaga:** How is science supported in the West, for example, in the U.S.?

**Gokhberg:** In the U.S. there is a well-developed system to support science, both financially and legislatively. Expenditures for science are divided between the government (44%), the commercial sector (51%), and local agencies (5%). Moreover, there are a number of incentives to invest in science which are extended to noncommercial research organizations, the expenditures of corporations for fundamental research done at universities, expenditures to acquire scientific equipment, expenditures for foreign investment in science, etc. These incentives differ by field, type of activity, goal, and time. For example, the shortfall in the U.S. federal budget in 1983-1989 due to extension of tax breaks to companies for scientific research and experimental design work totalled \$145 billion. And such expenditures continue. Our legislation and legislative acts are as yet only a weak stimulus to scientific activity.

**Semiryaga:** The figures are of course impressive. However, when we compare something Russian with something Western, there are frequently misunderstandings associated with different definitions of some concepts.

**Gokhberg:** You're right. When one compares the resources for science in Russia and the United States, one must define terms. Our division of science into academic, branch, and institutional science is somewhat archaic. When they speak of academic science in the West, they mean universities where teaching, training of personnel, and research, including fundamental research, are combined. In the West they use another classification of science, not by sectors of science, but by sectors of activity. There are four sectors:

- the government sector unites organizations which conduct research in the interests of society as a whole (health, education, defense, etc.);
- the entrepreneurial sector unites organizations whose activity is directed toward the development of specific branches of the economy. This sector includes not only private firms, but also government organizations;
  - the higher education sector, which unites universities and subsidiary research organizations;
- the private nonprofit sector, which includes all possible funds, public scientific organizations, and academies (in the western sense of the word).

If one uses this classification, then the volume of science financing in Russia in the government sector is 75%.

**Semiryaga:** I get the impression that in the foreseeable future Russian science will not obtain financial support from commercial structures. Having made their millions selling beer and beds our businessmen simply will not put money into science due to some psychological attitude. Science is subtle stuff. In science you need not only money but also a head. Foreign capital isn't rushing into Russia either. One can say Soros a thousand times, but there's only one Soros [Fund]. So where's the answer?

**Gokhberg:** You know it may in principle be inappropriate to expect commercial structures to put money into science now. First they must be interested in beginning to put money into industry, which then will form a demand for scientific research and development. By the way, this is global practice. The demand for science from industry is possible only when the entire economic situation is stable. There is no direct demand for science like this. And as for support of fundamental science, this is a direct function of government. Schawlow, the Nobel Prize laureate showed in his book the effectiveness of government support of fundamental research from the point of view of the interests of society as a whole. That is, these expenditures are not worthless.

However, on the other hand, there is the paradoxical example of the relation of the commercial sector to science. In the West many solid firms are conducting fundamental research on problems which have nothing

to do with their basic operations. Why? The company is pursuing two goals here. The first is that by conducting fundamental research, they are supporting the possibility of diversifying their activity in the future if necessary. Second, one of the achievements of the control of science by companies is the formation of a principle by which the development of fundamental research within a firm in directions which are not directly associated with their operations stimulates a research atmosphere among the personnel. This is a psychological factor into which money is invested.

But business must grow into this understanding.

#### Information

The center for Research and Statistics of the Ministry of Science of Russia and the Russian Academy of Sciences was formed in 1991. It specializes in research of social-economic problems of science in Russia, the development of the methodology and statistics of science, analysis and forecasting of the development of scientific potential, the problems of the development of a market for scientific and technical products. It has close contacts with international statistical organizations, universities, research centers, and the statistical services of the United States, Japan, and European countries.

#### MinScience Official Compares United States, Russian S&T Financing

937A0132B Moscow IZVESTIYA in Russian 29 Jun 93 p 10

[Article by Boris Konovalov, IZVESTIYA correspondent. First article is IZVESTIYA introduction.]

[Text] The directors of the world-renowned Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences decided on 1 July to pay personnel only 40% of their pay or to offer unpaid leave.

There is not a kopeck in the Institute's budget. They have vast debts. They have owed the Institute of Space Research of the Russian Academy of Sciences alone more than 20 million rubles since the beginning of the year for some of the laboratories in one building. The decision may be made to turn off the heat, water, and electricity because there is no money. This year the institute celebrated its fortieth anniversary, but it was a sad anniversary. The main computing equipment is hopelessly outdated and must be written off. There is no money for new equipment or to pay the elite of our applied mathematicians.

"This is a characteristic situation," stated the president of the Russian Academy of Sciences, Academician Yu. Osipov. "The money for salaries for May for the Academy of Sciences was only fully transferred at the end of June. We were forced to pay our personnel from funds intended for science and utilities. Now the reserves are exhausted. The Academy of Sciences is balanced on the edge of an unstable equilibrium, and it



will only take a small push for everything to start to crumble. Today, in solving the tactical problems of fighting inflation, Russia may place strategic goals in a dangerous position, losing its scientific and technical base for independent development."

No one foresaw the critical situation at the beginning of this year. The new premier, V. Chernomyrdin, named sciences as one of the five priorities of government policy. Actually, financing was increased, and this year's budget promised not a collapse, but modest survival. But inflation quickly extinguished the euphoria of the first quarter.

Indexing of wages by a factor of 1.9 was announced on 1 April. This reduced the tension somewhat. Many institutes, with the official promise of indexing, sought loans and obtained short-term credit to improve somewhat the impoverished situation of scientists. But May came, June ended, and the promised indexing did not come. Judging by the decisions which have been announced, it will come no earlier than August. But there is no certainty of even this.

"There's nothing we can do," stated the Minister of Science and Technical Policy of the Russian Federation, B. Saltykov. "Of the funds planned for a half year a little more than half has been transferred to the account of the Ministry of Science. We cannot meet our own obligations before the many scientific centers, academic institutes, institutions of higher learning, and the Fund for Fundamental Research. The situation with financing overall in the country is extremely tense: if all promises are met, then according to the calculations of the Ministry of Finance the budget deficit at the end of the year will be not the planned seven trillion rubles, but a factor of three more. We understand this, but at the same time we are trying to impress upon the leadership of Russia the fact that if they do not take emergency measures, science will go into a tailspin and the consequences for the country will be sad."

We hope that it will not come to a catastrophe. In the last two years the number of individuals in science has already dropped by 600,000 persons. Any further decrease will cause a collapse. It's not worth thinking that all those who were the pride of our science will find work in the West; they are only accepting a very limited number of scientists there.

We have heard a great deal about the fact that the Western governments are ready to render assistance to our science, but for now these statements remain political declarations. Government support from the United States is very limited, as is the case for Europe, and after a year of agonizing negotiations, a decision was finally made to create the European "Association To Support Science in the Countries of the Former Soviet Union."

Noticeable aid has so far come only from private funds (MacArthur, Carnegie). The American Physical and Mathematical Society has distributed more than a million dollars to its colleagues in Russia. The greatest

contribution to the support of fundamental science in Russia has been made by the International Scientific Fund (the "Soros Fund"). Here ends the selection of announcements for the first phase: this is temporary aid of \$10 million; about 20,000 Russian scientists will receive grants. Documents have been signed for the second stage (\$50 million).

But the help of private funds frequently does not reach scientists in the CIS due to obstacles on our side. It is paradoxical, but a fact, that some officials want to take taxes out of charitable aid. By Western standards this is absurd. Taxes are not imposed on charity anywhere.

Now, finally, a clarification has been obtained from the Ministry of Finance and the State Revenue Service freeing the grants from taxation.

Of course, one should not think that the scientists themselves are awaiting the death of domestic science without grumbling. All the scientific centers and institutes are actively seeking secondary sources of income. Many are successfully getting contracts (sometimes rather large ones, up to several hundred thousand dollars) for research and development for other countries. That which our penniless industry cannot buy is a road to the world market.

Many are going abroad for temporary work for a half year or a year. And now they are not only going to the West, but also to the East. In South Korea, for example, about 150 Russian scientists are already working on contracts. According to the Minister, B. Saltykov, South Korea is ready to take another 200 of our specialists. By world standards the conditions there are more than modest, and by ours, are not bad. Free housing, food, and \$1,000 per month. Which scientists in Russia get a million rubles a month?...

In addition, there is no need to close our eyes to the fact that the process of interaction of Russian science with the West and East is still almost totally unregulated. On the one hand we do not know how to correctly evaluate intellectual potential. On the other, there is no mechanisms to protect it, no state control of the brain drain, and, mainly, siphoning of technologies. It is no secret that now all of Russia is crawling with "pirates" from foreign firms who, instead of obtaining licenses and documentation, simply entice our specialists, who keep everything in their head. Instead of many millions of dollars, which the firms should pay to the government, which spent vast sums for development, they simply give a modest wage individually to one scientist or a small team.

Our science cannot remain neglected, it must be helped; we cannot rob future generations. Without science in Russia there is no future. And it must be saved today, without allowing looting and destroying of that which was gained little by little for decades.

**Report on Declining Budget Allocations for Ukrainian S&T**

937A0135A Moscow *DELOVOY MIR* in Russian  
13 Jul 93 p 12

[Article by Viktor Grachev, *DELOVOY MIR* correspondent, Kiev: "Inadequate Financing is Dooming Ukrainian Science to Extinction"]

[Text] At present there are several tens of different kinds of academies in the Ukraine, but there are only four (including the Academy of Sciences) which are financed under the budget. There are three sources of financing: from the state budget, by agreements with clients and purposeful financing of state programs and projects of the State Committee on Science and Technology. Recently the second source has become weaker, but basic financing has increased.

If the priority in development of any science can be determined from the magnitude of the invested sums, the scientific priorities of the Ukraine during the past year were: materials science; physics and astronomy; mathematics, mechanics, information science; biological and medical sciences.

The earth sciences have received the least funds of all. Eight times lesser funds have been allocated to the social sciences and the humanities than to the enumerated priority sciences.

As a comparison:

—in the United States the priority sciences are arranged in the following sequence: aerospace industry; electronics industry; biotechnology, chemistry, production of new materials;

—in Italy—biology; medicine; physics; space research;

—in France—physics; biology;

—in Japan—biotechnology; new materials and "neuronal information science."

But it is not a matter simply of "shifted" priorities. In the United States 30 times more is spent per scientific worker than in the Ukraine. Under such conditions it is difficult to count on scientific achievements at the world level. Moreover, taking into account the rapid physical and moral aging of equipment and instruments, the decrease in the fraction of sums on their acquisition is causing special concern: in 1988—15%; in 1992—8.8%. The publication of scientific books during 1988-1992 decreased by 1/4 and its volume by 1/3.

The prestige of scientific activity continues to fall, for the most part due to a decrease in the real living standard of scientists. According to data from the Ukrainian Ministry of Statistics, the average wage in the economy of the country was 15,200 korobats, whereas in science and scientific services it was only 13,900 korobats. Recently the number of scientific workers of the Ukrainian Academy of Sciences has dropped by more than a thousand persons.

The state budget for this year also gives no reason for optimism. If sources of financing are not sought out in the immediate future Ukrainian science is doomed to extinction.

### **Serpukhov Accelerator Closed Because of Financial Difficulties**

937A0129A Moscow *SEGODNYA* in Russian No 24,  
11 Jun 93 p 2

[Article by Mikhail Chernyshov under the rubric "Science": "The Superaccelerator at Protvino Has Died. The Americans Will Be the Heirs"]

[Text] Three times in the present century Soviet physicists in the competition with American and West European scientists succeeded in coming out the leaders. Each time this was connected with the placement into operation of facilities that were unique in power—of course, for their times. This happened the first time in the late 1930s, when a 25 million electron-volt cyclotron was built in Leningrad. Then in the late 1950s and in the late 1960s: At that time the most powerful accelerators were put into operation in Dubna and Protvino.

The most gripping race developed in the 1980s. This was the time of "great construction projects," among which was the building of a new accelerator in Protvino. According to the design, it should have far surpassed the existing ones in capabilities and would enable our physicists to be about six to seven years ahead of everyone. The project was not secret, only with the exception of the amount of expenditures.

The first section of the "Proton Accelerating Storage Complex" (UNK)—such is the official name of the structure—is a closed tunnel a little more than 20 km long—something like the ring line of the Moscow metro. But in contrast to it, it does not consist of rough cast iron or reinforced concrete tubings, but is filled with the most intricate equipment. The acceleration of protons should be accomplished in the central stainless steel tube by 2,000 superconducting magnets. Each of them is 6 meters long and weighs several tons. The magnets were matched to each other with an accuracy of 1 micron.

In Serpukhov they built not only a special plant for the production of magnets, but also the largest production complex in the work for the making of liquid helium. The rated capacity is 30,000 liters an hour. This helium river was needed to maintain an extra low temperature.

They began the construction of the Serpukhov synchrotron in 1987 and proposed to complete its first section this year. While the building of another ring of the same kind should have begun later. In it the protons would have been accelerated in the opposite direction. The date of its placement into operation is 1995. The connection of the rings turned them into a so-called collider. The higher the acceleration of protons is, the smaller the particles into which they scatter on collision. And precisely this enables physicists to look into greater and greater depths of the microcosm.

As a whole the entire project was a very complex system, which also includes a linear collider and the first Serpukhov synchrotron, which has been in operation since

1967. The builders hurried, because in the United States they had prepared for the implementation of an even more imposing plan. In the town of Wakahatchie (Texas) a supermonster should have appeared. Its rings have a length of about 87 km each. The protons are accelerated by 10,000 superconducting magnets, the majority of which have a length of not 6 meters, as in the Serpukhov accelerator, but 15 meters. Whereas each of the rings in Protvino affects protons with an energy of 3 trillion electron-volts, the Texas unique object is nearly sevenfold more powerful.

But now let us see what happened in reality. The Institute of High-Energy Physics managed all the scientific equipment in Protvino. It was a part of one of the most wealthy union departments—the Ministry of Medium Machine Building. That is what they called it at one time for reasons of secrecy, but in fact this was atomic machine building. Until recently, and in general to this day, this is a unique technological empire, which produces literally everything, starting with nuclear warheads and ending with samovars "in the style of Palekh" and jewelry. The people of the Ministry of Medium Machine Building, just as, incidentally, the other members of the "nine" (the union defense ministries), liked to boast that they had in essence an "open account."

In 1987 the Ministry of Medium Machine Building allotted Serpukhov 1 billion rubles, which at that time came to about half of the annual budget of the entire union Academy of Sciences. The work advanced so successfully that the Serpukhov institute in the late 1980s began to form a team of American and West European physicists for the conducting of joint research on the new accelerator.

But subsequently there began what began. In 1991 the schedule was upset. In 1992 the work was actually halted. The Ministry of Medium Machine Building ceased to exist. After a rather lengthy pause another ministry appeared. And its main headache is to save if only nuclear power engineering. Specialists of the new department enter very reluctantly into conversations on the theme of Protvino. And what is there to say, when it is clear as it is: The Serpukhov accelerator is very much money, which has literally been buried in a trench.

Now is just the time to see what is being done in Texas. From the American press it is evident that there things are also not going splendidly. The cost of the accelerator, according to recent estimates, comes to \$8.4 billion. And this is provided that construction is completed by 1999. If not, it may increase to \$10 billion and more. Newspapers are comparing the Texas project with the West European "engineering miracle"—the 50-km tunnel under the English Channel. The tunnel cost \$15 billion. The public is comparing the two "miracles," and its reaction is clear: The transportation facility will begin to return the money any day now, but what will the physical instrument, even if a unique one, return and to whom? Congress is also criticizing the idea of the accelerator. Although one-fifth of the work has been completed, THE

NEW YORK TIMES notes, in Congress there are people who are seeking the shutdown of the project.

And still the work is proceeding. While the negative reaction is purely in the American style. It is difficult to recall if only one basic scientific and technical program, which was not accompanied by a cost overrun, a loud reaction of the public, and debates in Congress. In reality it is easy to count the number of shutdown projects on one's fingers. It is possible to assume that the Texas accelerator will still finish successfully. Let there be a consolation to us the fact that the Serpukhov plant is now delivering to Wazahachie giant magnets and, as Americans point out, ones of superior quality.

### **Russia, Ukraine Fight Over Division of Oceanographic Fleet**

937A0133 Moscow IZVESTIYA in Russian 10 Jul 93  
p 15

[Article by Andrey Subbotin, IZVESTIYA correspondent. First paragraph is IZVESTIYA introduction.]

[Text] Russia and Ukraine are dividing the Black Sea Fleet. After this horror a no less important problem for both nations lurks in the shadows: the scientific fleet. What will be done with it? Will it also be divided?

The State Oceanographic Institute (SOI) of the Russian Hydrometeorological Service recently celebrated its fiftieth anniversary. It was created in 1943 when its mission was to provide timely naval operations. In subsequent years it has been involved in physical and chemical oceanography, gathering information about the ocean.

The studies of the specialists at SOI can be judged by the following facts. During the lifetime of the Soviet Union the institute was the expert of the State Technical Inspection Service on the construction of objects in the sea. It is true that its expert opinions were not always heeded. Lack of consideration of hydrometeorological conditions

predicted by scientists in the building of the bridge over the Kerch Strait led to the government's loss of about a billion rubles.

Now that the SOI has created calculation methods and published guides and classified characteristics of hydrometeorological conditions, such losses have been reduced by at least half.

All of this speaks of the fact that with the disintegration of the Soviet Union the institute has lost its scientific fleet (ten ships of various tonnage) in the Black Sea based at Odessa and Sevastopol. In terms of money this is 90% of the value of the institute's foundation. In terms of science, it reduces by at least a factor of ten the flow of research information. The losses are now being suffered not only by Russia, but by the nations of the world community in the global system of oceanic research. The role of the scientific fleet is unchanged. Russia and Ukraine are already dividing the naval fleet, but they seem to have forgotten about science.

In the words of the director of SOI, Sergey Lappo, no official papers are even being prepared in Odessa and Sevastopol on the transfer of SOI ships to the account of the Odessa Center for Marine Ecology. Studies have been frozen, and the scientific vessels are not being used for their purpose. The first deputy director of the Federal Hydrometeorology and Environmental Monitoring Service of Russia, Valery Kalatskiy, stated that this issue will be resolved, but when it will be resolved cannot be stated exactly.

Meanwhile, the functions carried out earlier by SOI are being distributed among the State Committee on Emergency Situations and the newly organized Marine Coastal Service. As time goes on, the institute is losing specialists, many of whom have gone to work in Europe or the United States. And it is bitter that the scientists of Russia and Ukraine cannot agree on joint use of the scientific fleet.

It is possible to divide armies and construct new borders. But science knows no boundaries, it is indivisible. Nonetheless the trend is to divide it, even though today's scientific potential was created by all the peoples of the former Soviet Union together.



## Right of Russian Scientists To Work Abroad Defended

937401284 Moscow ROSSIYA in Russian  
26 May - 1 Jun 93 p 5

[Interview with Russian Federation Deputy Minister of Labor Igor Khalevinskiy, by ROSSIYA correspondent Tatyana Tysovsckaya, under the rubric "The Doors Are Open, Come In"; place and date not given: "Labor Migration: On the Run From the Crisis"—first paragraph is ROSSIYA introduction]

[Text] At the Seventh Congress of People's Deputies Russian Federation Minister of Security Viktor Baranikov announced with a sense of deep satisfaction the successfully conducted operation on the detention of a large group of Russian scientists who until recently had worked at secret defense enterprises of the homeland, which intended to leave for work under contract in North Korea. Of course, it would be a bad thing if an atomic bomb were to show up in the hands of Kim Il-song. But this incident also has another side: Is it a good thing if highly skilled specialists, who cannot find a use for themselves among the native birch trees, cannot go where they are needed? And if they can, how is this to be done so that at the border people in civilian clothes and uniform would not seize the sleeve? The conversation of our correspondent with Russian Federation Deputy Minister of Labor Igor Khalevinskiy is about this and not only this.

**Tysovsckaya:** The passed Law on the Employment of the Population in Russia opened at last the floodgates for the legal activity of Russian citizens abroad. Who can help them to find work in the countries of Europe, Asia, and America?

**Khalevinskiy:** The Law on the Employment of the Population in the Russian Federation established the right of citizens of Russia to carry out professional activity abroad. Article 10 of this law speaks about the right of citizens to the independent search for work and job placement abroad. However, according to the legislation of the majority of developed countries people, who have come on a private invitation or as tourists, are prohibited to get a job. Only a labor contract, which has been drawn up in advance and has been received by a Russian citizen in accordance with the legislation and in the manner established in the countries named above, can be the basis for job placement in these countries. Violation of the procedures is fraught with consequences, up to deportation from the country of residence.

**Tysovsckaya:** How many Russian citizens have already applied for assistance to state services and what are the immediate prospects?

**Khalevinskiy:** As of 1 March 1993 the number of citizens, who were not engaged in labor activity and had applied for assistance to bodies of the state employment service, came to 1.1 million. The greatest strain on the labor market is expected in the middle of 1993.

Today the realization of the right of citizens of Russia, which is secured by legislation, is extremely difficult—there is no mechanism of its practical realization, there are many gaps in national legislation and vagueness in state policy. But work is proceeding. The Ministry of Labor and the system of its institutions are forming the organizational infrastructure for the practical realization of the right to work abroad. A service for questions of the foreign labor employment of the populations has been established in Rosintertrudmigratsii. More than 20 private agents have received a license for the right to find Russians jobs abroad. In contrast to "not officially organized" ones they have capital and prepare candidates for departure so that the migrants would have a specialty at the level of international standards, would know foreign languages, and would have the ability to adapt psychologically in unfamiliar surroundings.

**Tysovsckaya:** Are there any agreements on labor migration at interstate levels?

**Khalevinskiy:** In January of last year the Ministry of Labor initialed two agreements between the governments of Russia and Germany, in accordance with them more than 10,000 Russians will be able to go to work for a period of up to two years at small and medium enterprises of the FRG. According to another one, "The Agreement on the Employment of Guest Workers," the annual mutual exchange of 2,000 workers of various occupations from 18 to 40 years old with Germany and France is envisaged. The cooperation in the social labor sphere with Great Britain, Austria, Belgium, and Finland in the exchange of trainees for a period of up to two months is of interest. The "tigers of Asia," such as Singapore and Thailand, have already expressed the desire to admit Russian migrants. The countries of the Persian Gulf—Bahrain, Kuwait, and Saudi Arabia—are also interested in hiring our highly skilled specialists.

In such countries as the United States, Israel, and Greece, the labor quote is being "eaten up" by the mass entrance for permanent residence, which is hindering substantially the "net" labor migration. While in Europe the intensive aging of the population is occurring, there, according to the estimates of demographers, by 2010 tens of workers from outside will be required; today European places are held by emigrants from the countries of Asia, Africa, and the former "socialist camp."

**Tysovsckaya:** Much anxiety in recent times has been expressed with regard to the question of the "brain drain." Does the fate of the Latin American countries, the "cream of the nation" of which moved to the United States and Canada, threaten Russia?

**Khalevinskiy:** Such a danger does exist, and one should not resolve it by bans and restrictions. On the contrary, it is necessary to take the path of easing the procedure of the departure and job placement of valuable specialists and scientists, who aspire to work abroad. International practice shows that if highly professional specialists work at laboratories or centers of France, Canada, the United

States, or England, science only advances. The homeland is assuming the duties at any time to hire its citizen, is retaining for him a workplace and the continuity of service, and provides an old-age pension. But, of course, the creation of creative conditions for the revelation of the potential of scientists in their own country is an indispensable condition. Without this there will be neither science nor discoveries and you will not keep people.

The West understands perfectly well that if Russia were to be bled white, this large country would be a threat to the world for its saturation with criminals and mafiosi. Now special-purpose aid to nuclear scientists of Russia along the lines of an American-English fund, which was established for this, is taking place, direct orders for leading laboratories for the development of ultra complex designs are being received, there are also other approaches.

One should not dramatize the situation with the brain drain. The practical experience of Turkey, India, Yugoslavia, and other countries showed that migration processes did not lead to the worsening of their situation. There is, after all, no American or French science—in its essence it is international. Scientists in contrast to other specialists, who are seeking a job through intermediary organizations, have their own language—science—and on no account must one hinder intercourse on its basis.

### **Russian-Indian Cooperation in Transputer Technology**

937A0131A Moscow KOMPYUTER MARKET  
in Russian No 15, Apr-May 93 p 7

[Unattributed article: "Second Russian-Indian Exhibit on Transputer Technology-Based Modeling and Visualization"]

[Text] The Second Russian-Indian Exhibit on Transputer Technology-Based Modeling and Visualization will be conducted from 11 to 21 May 1993 in Moscow by the Design Automation Institute of the Russian Academy of Sciences and the Center for Development of Computer Systems (Poona, India).

The exhibit's organizers and sponsors are the Russian Academy of Sciences, Russian Basic Sciences Fund, Design Automation Institute of the Russian Academy of Sciences, Presnya-bank commercial bank, Association for Computer Aerohydrodynamics, and Intelligent Systems Scientific Research Center.

Prototypes of computer technology, including the PARAM multitransputer system with 64 (128) processors and software for them, will be presented at the exhibit. Developments in the field of computer graphics, image processing, hydrogasdynamics, the mechanics of strained solids, medicine, banking systems, and space communications will be demonstrated as applications.

The exhibit's official languages will be Russian and English. At the exhibit you will be able to see exhibits, consult with developers on topics of interest to you, conduct commercial negotiations, or present your developments.

Admission to the exhibit is free and open only to organizational delegations from interested enterprises or departments. We ask you to send in advance your request to participate in the exhibit to Academician O.M. Belotserkovskiy, chairman of the organizing committee. In your request, we ask that you specify your professional interests, the persons constituting your delegation (no more than 10 persons) and its leader, the days convenient for your visit, and your phone number for a reply.

To demonstrate your developments, we ask that you address a request to the organizing committee, indicating the theme, the names of your representatives, a list of the equipment you will need and your exhibits, as well as the area you will need.

Direct telephone inquiries to Margarita Petrovna Reznik at the phone number (095) 250-88-53. Fax: (095) 250-89-28.

Address of the organizing committee of the Russian-Indian Exhibit on Transputer Technology-Based Modeling and Visualization: 123865, Moscow, 2-ya Brestskaya ul., 19/18, Design Automation Institute, Russian Academy of Sciences.

### **South Korea Buys Russian Laser Technology**

937A0131B Moscow KOMMERSANT-DAILY  
in Russian No 92, 19 May 92 p 9

[Article by Igor Pichugin under the "Results of Laser Technology Exhibit" rubric: "South Korean Firms Interested in Russian Lasers"; boldface as published in source text]

[Text] A laser technology exhibit-trade fair organized by the Laser Association was held from 12 to 19 May in Moscow ("B" [not further identified] told of the association's activity last week). Advanced Russian developments in the field of laser technology were presented at the exhibit. The exhibit participants, i.e., scientific research institutes and defense plants, did not release any information about contracts concluded; however, they acknowledged that they have no shortage of foreign clients.

Forty enterprises that develop and manufacture laser technology took part in the exhibit. They included the largest defense plants and institutes, such as the Astrofizika, Polyus, and Plazma scientific production associations, as well as academic institutes and small enterprises. Among the first to visit the exhibit were representatives of the South Korean firms Samsung and Daewoo. They saw all of the prototypes and carefully wrote down the necessary details regarding all the exhibitors.

The high level of Russian scientific progress in the field of laser technology has long been recognized throughout the world; however, at the exhibit one could become convinced that series-produced Russian lasers are distinguished by their high quality. Most of the exhibit's participants who knew how to set up series production of their developments did not complain about a lack of clients, including buyers from Japan, the United States, and Europe. The sharply rising (even compared with last year) ruble prices of laser technology led to a decrease in domestic demands for it, however.

Decorative products made of wood and stone and furniture made by using laser units at the Avitek Machinebuilding Enterprise in Vyatskiye and by the Moscow firms Alemaks and Lazer III invariably aroused visitors' interest. The cost of these units has now reached 10 million rubles; however, the ecologically pure and no-waste production they afford permits a quick return of the money invested in them. One fourth of the firms represented at the exhibit demonstrated various laser instruments for medicine. Some of them use unique methods based on the effects of laser radiation on the human body.

**High Energy Physics Institute Seeks Deal With British Nuclear Firm***937A0136A Moscow DELOVOY MIR in Russian  
13 Jul 93 p 9*

[Article by Gennadiy Dernovoy, Institute of High Energy Physics, Protvino; "What is the Cost of Beams of Protons"; the first two paragraphs are an introduction]

[Text] What is a "highly promising meeting"? It is such a meeting during which not only promises are given, but also specific steps are taken in order to strengthen the promises by business agreements.

Precisely such a meeting took place between Russian scientists specializing in research on the physics of elementary particles using accelerators and British businessmen representing the British Nuclear Energy Sources Corporation BNFL (British Nuclear Fuels PLC).

The negotiations began with a familiarization visit of the British to the leading Russian accelerator centers: High Energy Physics Institute (HEPI) at Protvino, near Moscow, Dubna Joint Nuclear Research Institute (JNRI) and Nuclear Research Institute (NRI), Russian Academy of Sciences (RAS) (the beginning of cooperation was reported in N&B, No 19). That was followed by an immediate return visit of Russian physicists, topped off by the signing of a "Memorandum of Intentions."

The Russian side was represented by the scientific head of the HEPI, A. A. Logunov, academician, RAS, the director of the HEPI, professor L. D. Solov'yev, the director of the NRI, V. A. Matveyev, corresponding member, RAS, and the director of the JNRI, V. G. Kadyshevskiy, corresponding member, RAS. Negotiations on the British side were headed by Dr. Richard Holmes, BNFL director. The discussions indicated that there is a whole series of directions in the research of Russian physicists which is of practical interest for BNFL specialists. The Russian delegation, on its part, was familiarized with the organization of work at the enterprises of the corporation at Sellafield and at the Springfield laboratory of the BNFL.

It was noted in the adopted memorandum that already in the coming months (a time up to 15 October was stipulated) there would be an intensive exchange of information between the signing parties. In particular, the British are interested in the capabilities of physicists from Protvino and Dubna for the production of isotopes in the proton and heavy ion accelerators, the project for a neutron source and research on irradiation by beams of particles carried out at the JNRI, NRI and HEPI. Matters related to a nondestructive (and accordingly, safe) technology for reworking nuclear energy wastes, as well as a method for electric polishing of high-technology items, were discussed. It was noted from the British side that in all these directions the Russian researchers have done major development work, in some cases surpassing the attained world level. The practical British understand well that the definite expenditures which they have

now made for supporting Russian research will later yield them good dividends. And with respect to the scientific groups from Russia, support from the outside would now be useful as never before. Indeed, much of that which today causes interest and even delight among foreign scientists and businessmen may be irretrievably lost...

The negotiations also revealed that Russian physicists, speaking figuratively, do not always "know their own value." For example, preliminary estimates of the cost of proton accelerator "beam time," made by our specialists not very experienced in business, were very, very understated in comparison with the international standard. It is therefore no accident that in the memorandum great attention was devoted to matters of working out sound rates for the "services" supplied to the British side. And purely business matters are dealt with in the program for the exchange of information and in the conducting of joint seminars for the specialists.

Thus, all the prerequisites exist for the unique capabilities of Russian research apparatus and the high achievements of our scientists and engineers being given a high evaluation and these have found use in the world of Western high technologies. The advantage from the initiated cooperation is mutual and unquestionable.

**Radionuclide Joint Venture Supports Uzbek Nuclear Institute***937A0136B Moscow POISK in Russian No 23 (213),  
11-17 Jun 93 p 4*

[Article by Stanislav Fioletov, POISK correspondent, Tashkent: "Surprisingly Magnificent"; the first paragraph is an introduction]

[Text] About a quarter of the world need for the radionuclide cobalt-57 is today being supplied by the Uzbek-Russian-German enterprise Tezinko of the Nuclear Physics Institute of the Uzbek Academy of Sciences. This is one of the few joint enterprises in the republic which have won themselves a solid place in the Western market. "You go with outstretched hand, humbly, as many now do," says the president of the joint enterprise, Bekhzod Yuldashev, director of the Nuclear Physics Institute. "Especially when at hand there are exceptional pieces of development work capable of bringing their inventors not only renown, but also capital for further work. In the mid-1980s the accelerator apparatus at the institute was actively used in carrying out research having, so to speak, a special character. At the same time work proceeded with cyclotron isotopes, but on a now-and-then basis. However, Yevgeniy Gureyev, now already deceased, did not want to settle with such a state of affairs. Even then he sensed the world trend and began to speak out insistently on the need for a sharp increase in the volume of work on isotopes. He was heard. Between 1985 and 1991 the production of radioisotopes increased by a factor of 20-30. Whereas in the initial stage the same cobalt-57 with an intensity 2.8 curie was



obtained each year, today it is at the level 50-60 curie. This radionuclide is necessary in many fields—in engineering and medicine, in industrial apparatus and in scientific instruments. But on the way to the world market stood the problem of the quality of our specific product. Much was learned, and with persistence, from one of the 'greats' of national science: the Obninsk Physical Energy Institute. Later they themselves worked out an original technology. With their own resources and virtually without drawing upon state funds they carried out a radical reconstruction of the cyclotron. After this the leaders of the institute sent off to the London headquarters of the well-known British Amersham Company in London a telex with a detailed description of the nature of its activity and a proposal concerning cooperation." "The answer arrived literally three days later: the chief manager of the company was ready to meet with institute representatives in Moscow. The meeting took place." It was agreed that the British would receive test samples of our products and would make an expert evaluation. "No sooner said than done." The answer in English was laconic: "Surprisingly magnificent"! To be sure, even with this unquestionable success the doors to the world market still were not flung wide open. And nevertheless the Moscow Tekhsnabeksport proposed to the scientists a contract with the major German company Medgenics. "Cobalt was sent from Uzbekistan to Germany for almost two years; it was then sent on beyond the ocean to the universally known company Du Pont de Merck. Thus, the people in Tashkent finally cut a window through to the world." "The people in Tekhsnabeksport, which became one of the Tezinko cofounders, also believed in the potential of the Uzbek nuclear specialists. Its share in the corporate stock of the joint enterprise is 5%. It would seem that now it was possible to get by without intermediaries. But, in the opinion of the general director of Tezinko, Ilyar Gulamov, doctor of physical and mathematical sciences, the highly qualified specialists at Tekhsnabeksport constituted a body which it would be simply stupid to turn away. Only very self-assured and not very intelligent people dive headlong into independent swimming in the waves of the world market. They are not expected there and they are not known there." "Tekhsnabeksport is taking upon itself solution of all the juridical and transportation problems. Finally, it was precisely the Muscovites who found our present-day German partner, also becoming one of the Tezinko cofounders, the Helmut Swin Konsult Company." "On the Uzbek side the founders of Tezinko came to be the Nuclear Physics Institute itself and two of its subdivisions: the scientific-production leasing enterprise Tezlatgich, which in translation from the Uzbek language means 'accelerator,' and the Radiopreparat joint stock company. After an almost two-year test period Du Pont included the joint enterprise in the list of its permanent suppliers." "And what about the British Amersham Company? Today it has again appeared on the horizon with an extremely interesting proposal. Its specialists, in collaboration with physicians, have created a method for treating some severe types of pulmonary inflammation by introducing

small doses of ultrapure cobalt-57 into the damaged sector. Could Tezinko not begin its production"? "Why not, they decided at the joint enterprise. Particularly since the starting up of a second cyclotron, the history of whose appearance is extremely instructive, was imminent. There had already been talk about a new cyclotron several years ago. The well-known Belgian ABE Company was ready to sell the necessary model for four million dollars. But, to be sure, there was no money. But then Tashkent scientists in collaboration with their more experienced colleagues from Dubna created their own machine. So there is truly no bad without good: the cyclotron turned out to be exceptionally successful. And without spending any dollars." "The expansion of its own production is the first concern of Tezinko, but by no means has it forgotten scientific research, which in general also became the basis for its present-day prosperity. Both the Nuclear Physics Institute and the Academy of Sciences are receiving extremely significant support from the joint enterprise." "During the past year 300,000 rubles were spent in purchasing potatoes and onions for the specialists, 280,000 on sugar and 100,000 on honey. And everything was handed out free. In our difficult times when other institutes are scarcely making ends meet, the Nuclear Physics Institute has purchased 74 apartments. More than a small percentage of the money for them was supplied by Tezinko." "There are only seven Tezinko staff personnel. The main contingent works with the cyclotron and in Radiopreparat. Tezinko is concluding with its partners agreements for a specific volume of work. The people select who will be in charge of the cyclotron. An individual contract is signed with each person. The pay is handed out sealed in small envelopes, as in the West, and no one knows who gets how much. To be sure, there also may be some gossip passed around, but any question to the directors of the type: and why does Ivan Sidorovich receive so much?", results in immediate cancellation of the contract and dismissal. This system was adopted at a general meeting and therefore questions do not arise and those wishing to work in a new way are not transferred to a new job, there are other people to choose from. In analyzing the activity of "Tezinko" and its founder, the Nuclear Physics Institute, the following question arises: "can this experience be duplicated at other scientific research institutes? To be sure, this enterprise has its specifics, but there is a definite percentage of carryover. But the most important thing is that there is a possibility, even during the present-day difficult times, not only for surviving, but also for developing and duplicating the Tezinko experience."

#### **Ukrainian Academy of Sciences Unchanged Despite Independence**

937A0145A Kiev PRAVDA UKRAINY in Russian  
12 Aug 93 p 3

[Interview with Academician Petr Petrovich Tolochko, vice president of the Academy of Sciences of Ukraine, by UKRINFORM correspondent Aleksey Trotsenko, under

the rubric "24 August Is Independence Day of Ukraine"; place and date not given: "The Academy of Sciences of Ukraine: Problems and Prospects"—first paragraph is PRAVDA UKRAINY introduction]

[Text] It is probably difficult to find any other state structure or institution of Ukraine, which back during the Soviet period had acquired such extensive authority not only in the country, but also abroad, as our Academy of Sciences. I remember that even the most well-known scientific centers of western countries considered it an honor to establish business relations with institutes and other research institutions of the Ukrainian academy. Just how are things going at our main scientific institution? How is it getting on under the conditions of the independent state? A correspondent of UKRINFORM asked Academician Petr Tolochko, vice president of the Academy of Sciences of Ukraine, to answer these and a number of other questions.

**Tolochko:** First of all, the academician said, I think that it would not be out of place to mention several facts that are connected with the founding of the Academy of Sciences of Ukraine. It, as they say, was born on 27 November 1918 in Kiev. And among its godparents there were such world-famous Ukrainian and Russian scientists as Vladimir Vernadskiy, Dmitriy Bagaliy, Orest Levitskiy, Mikhail Tugan-Baranovskiy, and others. It is also worth emphasizing the fact that the establishment of our academy of sciences was a significant event in the life of Ukraine and answered the perennial dream of several generations of the progressive national intelligentsia. The organization of such an academy was a natural development of the longstanding scientific traditions which had been forming on Ukrainian lands for several centuries. Let us recall that precisely here such significant scientific centers for their times as the Ostrog Greek-Slavic School and the Kiev Fraternal School existed during the 16th and 17th centuries, while the Kiev-Mogilyanskiy Academy, which played a large role for the Slavic world, existed during the 18th century. The establishment and subsequent activity of the Academy of Sciences of Ukraine had a positive effect on the formation and fruitful work of numerous scientific schools that appeared later.

**Trotsenko:** Petr Petrovich, a few words about the present status of the Academy of Sciences of Ukraine.

**Tolochko:** Scientific research institutes and scientific institutions equated with them are the basic structural unit of the present Academy of Sciences. Now there are more than 160 such institutions, of them five are international. A developed system of research plants, the work of which is aimed at speeding up the introduction of the results of basic research, has also been established at our Academy of Sciences. To be specific, now the research production base of the Ukrainian Academy consists of 102 cost accounting institutions. Among them are 14 research plants, 30 design and technological organizations, 20 research and experimental enterprises, and four engineering centers.

Now 214 small enterprises are operating under the Academy of Sciences of Ukraine. Nearly half of them produce test batches of scientific products, while the others are engaged in the introduction of developments of institutes and conduct scientific research and research and design work. As to the number of people working at the Academy of Sciences of Ukraine, it exceeds 77,000, of whom 54,293 work directly at scientific institutions. There are employed at the academy 203 academicians, 273 corresponding members, 54 foreign members, and 17,600 scientific workers, including over 2,000 doctors of sciences and more than 10,000 candidates of sciences.

**Trotsenko:** How much does the maintenance of the Academy of Sciences cost us?

**Tolochko:** In 1992, 10.4 billion rubles [R] were allocated to the academy from the state budget for the conducting of basic research and scientific and applied development. Moreover, institutions of the Academy of Sciences of Ukraine through competition of the State Committee for Science and Technology received an additional R454 million from the state basic research fund and about R2.8 billion for the implementation of scientific and technical programs. Such financing ensured the completion by institutions of the academy of 2,188 projects of state scientific and technical programs and 739 assignments of interstate scientific and technical programs.

The scientific achievements of the Academy of Sciences of Ukraine are ensuring it leading positions in the world in many scientific and technical directions. It is a universally recognized center in the area of materials science, particularly in such sections of it as electric welding and special electrometallurgy, powder and ceramic materials, synthetic diamonds, other superhard materials, and so on. The contribution of scientists of our academy to the development of mathematics, mathematical physics, information science, and theoretical, technical, and biological cybernetics is significant.

**Trotsenko:** Petr Petrovich, precisely such a calling card of our Academy of Sciences also contributed to the fact that in previous years many foreign scientific centers considered it an honor to cooperate with our institutes and other scientific institutions. Did we not lose these partners in recent years? After all, let us say frankly, now our Academy of Sciences is experiencing not the best of times. At the same time it now represents in the world the science of a young independent state. Therefore, the appraisals and the approaches to us are also different.

**Tolochko:** It is clear that the difficulties, which are connected with the building of an independent state, and the gradual changeover to a market economy could not but also affect the activity of our Academy of Sciences. Moreover, some ties were broken, while some time, of course, is required for establishing new ones.

And still it is safe to say that the Academy of Sciences of Ukraine today is also capable of solving the most difficult problems. It is important that it also maintained its authority on the international arena. The following facts,

in particular, attest to this: Now our academy is maintaining and developing fruitful relations with the academies of sciences of such countries as Bulgaria, Poland, Romania, the United States of America, and Hungary. Its institutes are implementing practical measures on the establishment of direct relations on scientific and technical cooperation with the corresponding centers of Austria, Italy, France, South Korea, the PRC, and India. Fruitful contacts are being developed with research organizations of the London Royal Society, the British Council, the Bavarian Academy of Sciences, and the German Research Society.

**Trotsenko:** The achievements of Ukrainian scientists in the sphere of the exact sciences are well known in the world, but what can be said about the humanities?

**Tolochko:** The past years were critical precisely in the development of the humanities at the academy. I want to stress that the basic efforts of our economists, lawyers, and sociologists were concentrated on the implementation of property reform and the formation of a market economy in Ukraine. Historians, ethnographers, archeologists, and linguists are performing much work on returning to the Ukrainian people material and spiritual values of the past, archive documents and handwritten books and on developing the national bank "Arkhivna i rukopisna ukrayinika." The rehabilitation of the good name and works of many Ukrainian scientists and writers, whose names were removed from the cultural and educational process, was an important event in the cultural life of our country.

And I would like to dwell on another aspect: Ukrainian medical scientists focused attention on basic research, which was aimed at the discovery of the pathogenesis and the development of new methods of the diagnosis, prevention, and treatment of the most prevalent diseases of man. Important scientific results were achieved, in particular, when studying the medical aspects of the accident at the Chernobyl Nuclear Power Plant, effective means of the prevention and treatment of diseases that are connected with the effect of ionizing radiation were developed. In general it should be noted that the activity of the Academy of Sciences of Ukraine on the Chernobyl problems involves, first of all, the solution of the long-range problems on overcoming the consequences of the catastrophe. These are the conversion of the "Sarcophagus" into an ecologically safe system, studies of the effect of small doses of radiation on biological objects and man, the study of the sociopsychological and socioeconomic consequences of the accident, and other aspects.

There are also other alluring projects and plans. It is clear that today in Kiev the financial possibilities are limited, but without the introduction of scientific developments it is absolutely impossible to change radically the ecological situation in the city, to achieve an increase of the level of products that are produced in the capital of Ukraine, and to solve urgent social problems. The Academy of Sciences, on its part, is prepared to do everything possible so that the latest and most advanced

developments of its institutions would find truly large-scale application in practice.

### **Ukraine Still Lacking Nuclear Energy Policy**

937A0145B Kiev PRAVDA UKRAINY in Russian  
12 Aug 93 p 3

[Article by Aleksandr Panchenko under the rubric "Problems of Nuclear Energy" (Energodar, Zaporozhye Oblast): "At an Impasse"]

[Text] The nuclear energy crisis of Ukraine is obvious and it is much more serious than in the other sectors of the national economy. The uncertain state of the sector, in case of which the Supreme Soviet never settled a fundamental question: Is nuclear energy to be developed or not? is aggravating the situation. Add to this the radiophobia, which has become ingrained in the consciousness of many people since the times of the Chernobyl tragedy, and the new campaign for the closing of the nuclear power plant, on which some people are contriving to make themselves a career.

All these most urgent problems were laid bare and were discussed in detail at the presentation of a unique simulator, which took place in Energodar, and the traditional briefing on the results of the operation of the Zaporozhye Nuclear Power Plant during the second quarter of this year. The sharp tone of the conversation with journalists and representatives of civil defense subdivisions and the public was set in the opening speech of Vladimir Bronnikov, general director of the Zaporozhskaya AES Production Association.

"Today a steep spiral of all kinds of rumors and conjectures is once again twisting around the nuclear power plants of Ukraine," he said. "Once again political parties and movements are trying, as they say, to blame someone else for the social problems that are tearing Ukraine apart. Therefore, we also invited to the plant journalists, representatives of the public, and specialists in order to show the public of Ukraine and the CIS and the entire world that we will maintain and operate the equipment and are training personnel at our plant in accordance with world standards, in order to show that all our units are in the first half of the best nuclear units of the world. While the fifth unit aspires entirely to a place among the first 20."

The guests were easily able to be convinced of this, inasmuch as they took them immediately to the block control panel of this fifth power-generating unit. Many people later recognized it in the large-scale simulator, which was specially developed for the Zaporozhye nuclear power workers and was assembled on site by specialists of the American company S3. It cost the Zaporozhye Nuclear Power Plant \$20 million. Now another simulator costing \$3.8 million is being assembled nearby. But, you will agree, this is still more advantageous than, as some "wise heads" propose, to turn into a simulator...the sixth power-generating unit, which cost Ukraine nearly \$1 billion.



There are already similar simulators at nearly all nuclear power plants of the world. A particular demand for them appeared after the well-known serious accident at the American Three Mile Island plant and the Chernobyl accident. The point is that nuclear power workers should emerge with flying colors from any irregular and even planned situations.

However, the startup of the simulator, incidentally, the first such advanced one in the countries of the CIS, will not solve all the problems of nuclear energy of Ukraine. The moratorium, which is already three years old, continues to have a most negative effect on it. Due to it the plant in Energodar thus far has not been completed, ecological programs have not been launched, the fire safety system has not been completed, a network of the physical protection of the plant has not been developed. So that the ban on the construction of nuclear power-generating units is actually having the opposite effect—we have become neither safer nor richer. I am not talking about the fact that the finished sixth unit has been idle now for a year instead of working for the benefit of Ukraine.

This, indeed, is a problem. But when the entire national economy of Ukraine feels all the consequences of the present nearsighted, rather, dilettante policy in the area of power engineering, its moving spirits, I have in mind a portion of the members of parliament and the leadership of the "Greens," will no longer be in office. Again, as has already happened more than once, there will be no one to call to account....

### Leadership Split Develops in Russian Academy of Sciences

937A0152A Moscow *NOVOYE VREMYA* in Russian  
No 32, Aug 93 pp 44, 45

[Article by Mark Deych: "Still Another Vice President Has Risen Against His President. War in the Russian Academy of Sciences"]

[Text] Recently the specialists of the scientific research institutes of the Russian Academy of Sciences arrived at a meeting protesting their wretched wages. This meeting was a link in a rather long chain of events. In March Boris Yeltsin signed a decree on budgeted organizations, including a provision on increasing the minimum wages of specialists. At that time the scientific research institutes already were accustomed to the Ministry of Finance transferring money for the payment of wages with a great delay. However, in April, gladdened by the presidential decree, the institutes cleaned out their reserves and paid salaries to specialists on time and with allowance for indexing. In May the institutes received their money from the Ministry of Finance. Indexing—an almost twofold increase in wages—was not taken into account. But late in May a Yeltsin decree (No 842) was issued. It spoke of a revocation of all preceding resolutions and decrees resulting in a worsening of inflation. Precisely which resolutions were to be abrogated were

not indicated in the new decree. However, for scientific workers (and not for them alone) this was not a Fermat theorem or even a Newton binomial: since indexing unquestionably intensifies inflation, one should not expect it (indexing). Meanwhile, money for the payment of wages ceased to arrive at all. All this taken together led scientists to the conclusion that the April decree of Yeltsin on indexing was nothing more than a maneuver before the referendum. At a trade union meeting of the Russian Academy of Sciences held on 30 June it was so stated. It was a rehearsal of a future meeting. Most of the delegates were in an entirely constructive mood. But when Anatoliy Shabad, a people's deputy and a specialist at one of the institutes asked to speak, loud voices of protest erupted in the hall. However, during voting it became clear that only 20 of the almost 400 persons were against giving Shabad the floor. In the assembly a resolution was adopted calling for preparations for a meeting. Its organizers can be understood: the wages of miners are increased taking inflation into account, so why shouldn't they be for scientists? However, the idea of a meeting (science is not a field for political discord) was not at all extremist. A video tape gives evidence: it was not the majority of those assembling, consisting of scientific workers, but the "fringe," being at the meeting in response to a call from the newspaper SOVETSKAYA ROSSIYA, that was in an extremist mood. After the meeting the situation in the Russian Academy of Sciences remains critical. But not for the bureaucratic levels of the Academy. During recent years this apparatus has scarcely increased. The old, tried-and-true cadres have been kept, such, for example, as offensive sections like the scientific-organizational section or the Foreign Relations Administration. By a decision of Viktor Chernomyrdin the salaries were increased for all Academy officials and were retroactive to 1 January (the corresponding order by the prime minister was dated 28 April). A member of the Academy Presidium receives 80,000 plus his salary from the institute. A department director receives 72,000 and the same plus. Heads of administrations each receive 67,000. And they receive it entirely regularly, at the times set by law. As a comparison: the wages of a senior scientific specialist at an Academy institute are 15,000 rubles. In June a Russian Academy of Sciences graduate student received a stipend of 4,275 rubles. Even without this the critical situation is being aggravated by the war which begun in recent days between Yuriy Osipov, president of the Academy of Sciences, and Valentin Koptug, Academy vice president. About two weeks ago Valentin Koptug demanded the calling of a general meeting of Russian academicians. The Koptug thesis was: the Presidium of the Russian Academy of Sciences is not coping with its obligations and the president, Yuriy Osipov, also is not coping with them. The Academy specialists with whom I talked confirm: both the presidium and the president in actuality are not coping. Those with whom I talked feel that Osipov has been rather weak in the role of president. To the question as to why the academicians elected specifically Osipov as president, I received an interesting answer. Yuriy Osipov is from Sverdlovsk. There, in



Sverdlovsk, his apartment was on the same floor as the apartment of Boris Yeltsin. Is it possible that this circumstance exerted an influence on the results of the secret voting in the election of the Academy president? But, without question, it was not this circumstance alone. In academic circles Osipov is regarded as a capable mathematician. In addition, he is quite young and was not entangled in Academy intrigues. Incidentally, in the elections Osipov's principal rival was Yevgeniy Velikhov, for whom the academicians have no special liking. Nevertheless, many voted for Velikhov, considering him to be a pragmatic person, which for the president is extremely important. Incidentally, Velikhov had no less influence on Yeltsin than Osipov. However, it was precisely Osipov who was elected: probably the aureole of a protege of the president of Russia was sufficiently strong. Despite the obvious dissatisfaction with the new president, his colleagues do not belittle his services. In particular, it was precisely Yuriy Osipov who saved the Academy from absorption by another which the Committee for Science intended to establish. The contacts between Osipov and both the Supreme Soviet and the president of Russia undoubtedly played a role in the favorable resolution of this problem. So that the academicians have reason to be grateful to the new president of the Academy of Sciences. Nevertheless, the workers of the Academy with whom I spoke feel that Yuriy Osipov is not coping. But they still suppose: Valentin Koptug declared war on Osipov for entirely different reasons. Not so long ago, during the period of the particularly vigorous development of the conflict

between Boris Yeltsin and the Supreme Soviet, in one of the meetings Yuriy Osipov in an extremely mild way proposed support for the president of Russia. At the next session of the presidium, however, Valentin Koptug declared that Osipov spoke wrongfully in the name of the Academy because by no means all academicians support Yeltsin. Thereupon Koptug demonstratively moved from the Presidium table to the rear rows next to former president Guriy Marchuk, around whom the Academy opposition is grouped. Taking advantage of the dissatisfaction of Academy specialists who had not been paid since May, Koptug, in their opinion, is gathering forces for an intra-Academy revolution. His objective, in the opinion of those with whom I conversed, is to oust Osipov and thereby deprive Yeltsin of one of his supports. These same people with whom I talked assume that if the revolution comes off and Osipov's place is occupied by Koptug, the situation in the Academy of Sciences will worsen sharply. Koptug also is known to his colleagues for his two hypothesis. He is a member of the Presidium of the All-Union Central Executive Committee of the Russian Communist Party, where he makes "contacts with the scientific intelligentsia." In addition, Valentin Koptug is chairman of the Siberian Department of the Academy of Sciences. In the Novosibirsk Akademgorodok he is famed because of his attempt to stop the privatization of the apartments occupied by scientists. Not enough that they do not receive their wages, some of them are losing their jobs. Koptug wanted to deprive them of the right to own their housing. Koptug calls his actions "saving of intellectual potential."

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